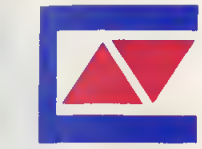
THE GEORGE BROWN
COLLEGE OF APPLIED ARTS
AND TECHNOLOGY

P.O. BOX 1015, STATION B
TORONTO 2B, ONT.



PART TIME COURSES 1972-73

Education
For
Employment

AFFIX
STAMP
HERE

THE GEORGE BROWN COLLEGE
of Applied Arts and Technology,

P.O. BOX 1015,

Station "B",

TORONTO 2B

E-164

PART TIME COURSES 1972-73

THE GEORGE BROWN COLLEGE OF APPLIED ARTS AND TECHNOLOGY

P.O. BOX 1015, STATION B
TORONTO 2B, ONT.

This College was established and is funded by the Province of Ontario through the Ministry of Colleges and Univerities.

Please Print Clearly

LAST NAME ..... FIRST NAME .....

HOME ADDRESS ..... APT. NO. ..... CITY ..... ZONE .....

Please Send Me ☐ A Registration Application Form

☐ More Information on the Following Course(s)

GENERAL INFORMATION

PART-TIME CLASSES will be offered in the subjects listed on the following pages from October 2, 1972 to March 16, 1973. The first term begins on Monday, October 2, 1972 and ends December 15, 1972. The second term begins on Monday, January 15, 1973 and ends March 16, 1973 for most courses.

REGISTRATION

At The George Brown College of Applied Arts and Technology on Monday - September 18, Tuesday - September 19, Wednesday - September 20 and Thursday - September 21, 1972, between the hours of 4:00 p.m. and 9:00 p.m. at each of the campuses.

Campus C — 507 College Street
Tel: 925-5961

Campus CL — 37 Dartnell Avenue
Tel: 362-3971 Ext. 188 or 190

Campus K — 21 Nassau Street
Tel: 362-3971 Ext. 121

Campus T — 51 Teraulay Street
Tel: 362-3971 Ext. 233

All course descriptions indicate the campus that will conduct the course. Special courses may be introduced if necessary.

FEES

It should be noted that fees are subject to change without prior notice; however, unless stated otherwise in course description, the following fee structure is applicable:

Courses of 30 hours duration	—	$20.00
Courses of 60 hours duration	—	$30.00
Courses of 90 hours duration	—	$45.00
Courses of 120 hours duration	—	$55.00

Each of these amounts includes the $5.00 registration fee; however, in some cases, the cost of laboratory fees and materials may be extra.

IDENTIFICATION

Your receipt is your admit-to-lecture identification and must be shown to the instructor at the beginning of the course and whenever requested. No receipt is an indication of non-registration.

REFUNDS

The Registrar must be notified in writing of a student's withdrawal; forms are available at the office for this purpose. Refunds will be made only if requested before the third scheduled session of the course. The $5.00 registration fee is not refundable; in addition, a charge will be made of $2.00 per scheduled session held prior to the date of application for the refund, regardless of whether or not the student attended classes. If a course is cancelled, full refund will be made. REQUESTS FOR REFUNDS MUST BE ACCOMPANIED BY THE OFFICIAL RECEIPT (white copy). In the case of a course failing to materialize because of insufficient enrolment, a full refund and notification will be forwarded to the applicant.

PART-TIME STUDIES DURING THE DAY

Individuals who may be free during day school hours are welcome to apply to participate in regular day subjects or courses. For further information call 362-3971 or direct inquiries to the day-school Registrar's office.

PREREQUISITES

Candidiates should be advised that many of the following courses require considerable related experience. The prerequisites for any given course are the minimum requirements.

MINIMUM ENROLMENTS

The college reserves the right to cancel any class for which attendance has dropped below the required minimum and to suspend or combine during the session any classes in which attendance falls below the minimum. Although it is proposed to adhere to the program as outlined in the calendar, courses and hours of instruction are subject to revision without prior notice.

TEXTBOOKS AND SUPPLIES

Textbooks and supplies for all Part-time Courses may be purchased at the individual campus bookstores.

CERTIFICATION

Applicants should inquire at the time of registration concerning certification and accreditation. Courses with X appended to the course number indicate non-certificate or special interest courses.

SPECIAL COURSES

Special courses will be offered from time to time at the request of individuals or organizations if an adequate enrolment is assured.

COUNSELLING

As a community service The George Brown College offers general counselling and information on each campus; appointments are necessary after 4:00 p.m.

PART TIME CALENDAR COURSE OUTLINE BY TECHNOLOGY

Academic Studies
- Chemistry 8
- Economics 4
- Elective Studies 5
- Language & Communication 2
- Law 4
- Mathematics 5
- Mechanics 9
- Physics 8
- Psychology 4
- Theatre 5

Advanced Technical Evening Class Program
- Civil 100
- Electrical 101
- Electronics 101
- Mechanical 101

Applied Arts
- Dental Technician 12
- Jewellery Arts 13

Architectural Technology
- Air Conditioning 18
- Appliances 20
- Blueprint Reading 24
- Building Construction 24
- Carpentry 15
- Drafting & Design 25
- Heating 21
- Masonry 16
- Plumbing 16
- Refrigeration 23
- Sheet Metal 17
- Stationary Engineering 27
- Steamfitting 18
- Survey 26

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- — Association of Survey Technicians and Technologists IX
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- Electronic Fundamentals 44
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- Radiography 66
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- Tool Design 57
- Ultrasonic Testing 67
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- Cakemaking Techniques 80
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Automatic Control Principles II — INST 300 50
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Computations — see Mathematics 6
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— Control Principles — INST 203 50
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CREDIT SUBJECT FOR CANADIAN INSTITUTE OF QUANTITY SURVEYORS 1972-73

Upon satisfactory completion of any of the following courses (and subject to the footnotes) students may apply for exemption from the applicable CIQS examinations.

DR	900	Architectural Drafting, Part I (Drafting)	55
AC	152	Bookkeeping	29
AS	908	Construction Law	4
CO	901	Construction Methods and Materials (Building Construction)	24
EC	100	Economics	4
CO	101	Quantity Surveying (Part I) and Building Construction Estimating	24
STR	218	Reinforced Concrete Design	26
STR	122	Structural Steel Design and Detailing, Part I	25

Footnotes:

Upon satisfactory completion of both "Structural Steel Design and Detailing, Part I" and "Reinforced Concrete Design" students may apply to the C.I.Q.S. for exemption from their examinations in Theory of Structure. Surveying and Architectural Drafting now form part of Building Construction I, II and III in the C.I.Q.S. examinations. Those students who wish to study C.I.Q.S. examination subjects not listed should make enquiries at the time of enrolment. Suitable courses may be arranged provided the enrolment meets minimum requirements. Students are advised to consult C.I.Q.S. for the new (1973) course outlines before enrolling in any extension courses.

CREDIT COURSES FOR ASSOCIATION OF SURVEY TECHNICIANS AND TECHNOLOGISTS

The following credit courses are offered by George Brown College:

SURV 201	Advanced Plane Surveying	27
SURV 204	Legal Surveying	27

Coursese are being co-ordinated through the office of the Association. All students interested in these courses should direct their enquiries to:

The Education Committee
Association of Certified Survey
Technicians and Technologists,
Suite 903,
8 King Street East,
Toronto.
Telephone — 364-6898

CREDIT COURSES FOR ASSOCIATION OF ARCHITECTURAL TECHNOLOGISTS OF ONTARIO

The following credit courses are offered by George Brown College:

ARCH	201	History of Architecture	23
CO	101	Quantity Surveying (Part I) Building Construction Estimating	24
CO	901	Construction Methods and Materials	24

For further information regarding courses as they pertain to certification please direct enquiries to:

Association of Architectural
Technologists of Ontario,
Post Office Box 962,
Postal Station "F",
Toronto, Ontario.

Academic Studies Courses

ENGLISH

LANGUAGE AND COMMUNICATION

ENG 130	English (Technical)
ENG 100	English I — A.T.E.C. Program (Approved)
ENG 200	English II — A.T.E.C. Program (Approved)
ENG 149	Business English (Refresher)
ENG 131	Advanced Level for non-English-speaking persons
ENG 146	College Preparatory
ENG 147	College Preparatory
ENG 900	Rapid Reading

LAW

AS 907	Business Law
AS 908	Construction Law
AS 909	Community Development

ECONOMICS

EC 100	Economics (Basic) — A.T.E.C. Program (Approved)
EC 900X	Income Tax and the Layman (January to March)

PSYCHOLOGY

PSY 200	Human Relations—Psychology—A.T.E.C. Program (Approved)

ELECTIVE STUDIES

ES 146	Current Issues — Canadian Studies

THEATRE

THEA 900	Theatre Arts

MATHEMATICS

MATH 157	Business Mathematics (Introductory)
MATH 130	Technical Mathematics
MATH 131	Technical Mathematics (Advanced)
MATH 132	Technical Mathematics (Intermediate & Advanced)
MATH 100	Mathematics I — A.T.E.C. Program (Approved)
MATH 200	Mathematics II — A.T.E.C. Program (Approved)
MATH 900	Mathematics III — A.T.E.C. Program (Approved)
MATH 901	Mathematics IV — A.T.E.C. Program (Approved)
MATH 903	Statistics I — A.T.E.C. Program (Approved)
MATH 120	Applied Computer Programming

CHEMISTRY

CHEM 100	General Chemistry
CHEM 210	Polymer Chemistry

PHYSICS

PHYS 133	Applied Physics (Technical)
PHYS 100	Physics I — A.T.E.C. Program (Approved)
PHYS 200	Modern Physics — A.T.E.C. Program (Approved)

MECHANICS

MECH 100	Mechanics I — A.T.E.C. Program (Approved)
MECH 200	Mechanics II — A.T.E.C. Program (Approved)
MECH 110	Mechanics of Materials I — A.T.E.C. Program (Approved)
MECH 210	Mechanics of Materials II — A.T.E.C. Program (Approved)

ACADEMIC STUDIES

Courses noted as "A.T.E.C. Program (Approved)" are accredited by the Department of Colleges and Universities as Advanced Technical Evening Class Programs and meet the requirements for certification in the Ontario Association of Certified Engineering Technicians and Technologists. (O.A.C.E.T.T.)

LANGUAGE AND COMMUNICATION

ENGLISH (Technical)

ENG 130 **Fee: $30.00, 60 hours, Campus CL**

Tuesday, 7:00 to 10:00 p.m.

This course is related to trades and technologies at the level needed by students proceeding to journeyman status.

The following reading skills will be developed: reading for comprehension, reading for details, reading for main ideas, summarizing information, making notes, and reading as studying.

Remedial and developmental work in oral and written expression will place special emphasis upon trade topics and technical communication.

ENGLISH I — A.T.E.C. Program (Approved)

ENG 100 **Fee: $30.00, 60 hours, Campus CL**

Thursday, 7:00 to 10:00 p.m.

The objective of this course is to develop the student's skill in the use of simple, clear, correct English. Emphasis is on effective oral and written communication, with special focus on reading/learning techniques, technical writing, and the oral communication of ideas, information and instructions.

Prerequisite: Gr. 12 English, English 130 or equivalent.

ENGLISH II — A.T.E.C. Program (Approved)

ENG 200 **Fee: $30.00, 60 hours, Campus CL**

Wednesday, 7:00 to 10:00 p.m.

This course will emphasize the student's skill in using English with greater facility, effectiveness and precision, through preparing and giving oral presentations, lectures and reports on technical subjects. Emphasis will be on the use of library resources for technical research, the preparation of written technical reports, the development of analytical techniques, and the organization of data.

Prerequisite: Eng. 100 or equivalent.

BUSINESS ENGLISH (Refresher)

ENG 149 **Fee: $30.00, 60 hours, Campus T**

Thursday, 7:00 to 10:00 p.m.

This course is designed for students who would like a refresher in business communications as well as for students who have no formal training in the writing of business communications. This course will include the following: a brief review of grammar, and a detailed study of punctuation and business

vocabulary; letters of application, acknowledgement, remittance, inquiry, request, cancellation, confirmation, and refusal; claim, adjustment, sales, social, and form letters; report writing; oral communications including interviews, telephone technique, prepared talks, discussions, and debates; developmental reading.

Prerequisite: Grade 10 or equivalent.

ADVANCED LEVEL FOR NON-ENGLISH-SPEAKING PERSONS

ENG 131 **Fee: $30.00, 60 hours, Campus T**

Tuesday, 7:00 to 10:00 p.m.

This course is designed for persons whose native language is not English, but who possess an ability in English equivalent to that normally reached upon completion of the basic course in English-as-a-second-language. Each student will be tested to determine areas of need and an individual program in language skills will be prepared. Emphasis will be placed upon vocabulary building, correct usage of expressions, idioms, sentence building, reading skill, composition, pronunciation, inflection, accent and conversation.

COLLEGE PREPARATORY

ENG 146 **Fee: $30.00, 60 hours, Campus T**

Monday and Wednesday, 7:00 to 10:00 p.m.

This course is designed for persons who wish to upgrade their language and communications skills for entry into courses at Colleges of Applied Arts and Technology, for persons who wish to attend courses elsewhere, or for persons who wish to enter employment for which Grade 10 standing is required.

Prerequisite: Grade 8 or equivalent.

COLLEGE PREPARATORY

ENG 147 **Fee: $30.00, 60 hours, Campus T**

Tuesday and Thursday, 7:00 to 10:00 p.m.

This course is designed for persons who wish to upgrade their language and communications skills for entry into courses at Colleges of Applied Arts and Technology, for persons who wish to attend courses elsewhere, or for persons who wish to enter employment for which Grade 12 standing is required.

Persons successfully completing English 147 may apply to the Department of Education for credit towards a Grade 12 certificate.

Prerequisite: Grade 10 or equivalent; English 146.

RAPID READING

ENG 900 **Fee: $30.00, 60 hours, Campus T**

Tuesday, 7:00 to 10:00 p.m.

This course is designed to help you improve your reading speed and level of comprehension and is conducted in an up-to-date reading laboratory. The student's current reading level is diagnosed and an individual program is devised to correct reading problems; following this, emphasis is placed upon improving the student's reading speed. This popular course also teaches the student modern methods of information processing.

BUSINESS LAW

AS 907 **Fee: $30.00, 60 hours, Campus T**
Tuesday, 7:00 to 10:00 p.m.

This course is designed to provide an understanding of Common Law as it applies to private citizens and to persons engaged in small business enterprises. It includes definitions and explanations of such legal terms and situations as contracts, employment, agency, the sale of goods, insurance, real estate, partnership, bankruptcy, negotiable instruments, business crime, torts, etc.

CONSTRUCTION LAW

AS 908 **Fee: $30.00, 60 hours, Campus CL**
Monday, 7:00 to 10:00 p.m.

This course is designed to provide an understanding of civil law as it applies to the construction industry. Course content includes construction laws and by-laws, contracts, engineering agreements, labour relations and trades disputes, Workmen's Compensation, patents and inventions, trade marks, industrial design and copyrights, company law, boundaries and surveys, easements, factory and shop acts, mortgages, mechanics' liens, etc.

COMMUNITY DEVELOPMENT

AS 909 **Fee: $30.00, 60 hours, Campus T**
Monday, 7:00 to 10:00 p.m.

This course is designed to aid the professional development of those engaged or interested in community work. It includes the analytic study of urban communities, their organization and political structure; analysis and study of current social problems and methods and strategies for their solution; study of human relations and the dynamics of change; contemporary issues in urban living and their social, economic and psychological impact.

ECONOMICS (Basic) — A.T.E.C. Program (Approved)

EC 100 **Fee: $30.00, 60 hours, Campus CL**
Tuesday, 7:00 to 10:00 p.m.

This course is designed to provide an understanding of the economic factors that influence the personal and business affairs of Canadians. The course includes study of the basic economic structure of our society, supply and demand, business organization, money and banking, international trade, business cycles, public finance and taxation, consumer credit and borrowing, personal finances, social services, etc.

HUMAN RELATIONS — Psychology — A.T.E.C. Program (Approved)

PSY 200 **Fee: $30.00, 60 hours, Campus CL**
Wednesday, 7:00 to 10:00 p.m.

This course is designed for the development of an understanding of human behaviour and the problems of getting along with others in our complex and changing society. Emphasis will be placed upon employment, industrial and business situations, understanding self and others and interaction within the group.

INCOME TAX AND THE LAYMAN
(Offered January to March)

EC 900X **Fee: $20.00, 30 hours, Campus CL**
Thursday, 7:00 to 10:00 p.m.

This course is designed to assist the average taxpayer to understand the new income tax legislation, how to make returns, how to benefit legally and what to do about capital gains, registered retirement plans, income averaging, the new exemptions, and Ontario succession duties.

CURRENT ISSUES — Canadian Studies (Elective Studies)

ES 146 **Fee: $30.00, 60 hours, Campus CL**
Monday and Wednesday, 7:00 to 10:00 p.m.

This course will appeal to those who are concerned about the social, political and economic issues being faced by Canadians in this era of rapid change. The issues to be studied in depth will be selected by the group. Sessions will be of the seminar type with emphasis on individual participation. Sessions commence September and January.

THEATRE ARTS

THEA 900 **Part I — Acting for Beginners**
Monday and Wednesday, 7:00 to 10:00 p.m., Fee: $30.00
Part II — Development of Characterization
Tuesday, 7:00 to 10:00 p.m., Saturday 12:00 noon, Fee: $30.00
Part III — The Story of Film Arts
Sunday, 7:30 to 10:30 p.m., Fee: $30.00

This course is offered in response to the deep interest of people of the Toronto Community in becoming involved in the drama, the theatre and the arts of cinema. The course is divided into three parts of 60 hours each.
Registration is in September and January, at Campus T.

BUSINESS MATHEMATICS (Introductory)

MATH 157 **Fee: $30.00, 60 hours, Campus T**
Wednesday, 7:00 to 10:00 p.m.

This course is designed for people active in business and commerce who would like to improve their skill in arithmetic used in ordinary business activities. It should be of interest to persons employed in retail and wholesale sales and in small businesses.
Course Content — Practice in adding, subtracting, multiplying, and dividing, extended to fractions, decimals and percentages; application of these operations to business problems; use of simple calculating machines to solve problems in costs, discounts, interest rates, and payrolls.

TECHNICAL MATHEMATICS

MATH 130 **Fee: $30.00, 60 hours, Campus CL**
Fall Term: Wednesday, 7:00 to 10:00 p.m.
Winter Term: Tuesday, 7:00 to 10:00 p.m.
Spring Term: Monday and Thursday, 7:00 to 10:00 p.m.

This course is designed for tradesmen, apprentices and persons desiring a foundation in trade mathematics. *Basic* and *intermediate* levels for most trades

are covered in the course.
Course Content — Whole numbers, fractions, decimals and percentages applied to trade problems; square root calculations and the Pythagorean theorem; calculations involving circles, triangles, compound areas and volumes; manipulation of trade formulae.

TECHNICAL MATHEMATICS (Advanced)

MATH 131 **Fee: $30.00, 60 hours, Campus CL**

Fall Term: Wednesday, 7:00 to 10:00 p.m.
Winter Term: Tuesday, 7:00 to 10:00 p.m.
Spring Term: Monday and Thursday, 7:00 to 10:00 p.m.

This course is designed for tradesmen, apprentices, and persons desiring advanced study in trade mathematics. The *advanced* level for most trades is covered in this course.
Course Content — Manipulation of more complex trade formulae; mensuration; graphs, charts and trade estimating; ratio, proportion and variation; the slide rule.

TECHNICAL MATHEMATICS (Intermediate & Advanced)

MATH 132 **Fee: $30.00, 60 hours, Campus CL**

Fall Term: Wednesday, 7:00 to 10:00 p.m.
Winter Term: Tuesday, 7:00 to 10:00 p.m.
Spring Term: Monday and Thursday, 7:00 to 10:00 p.m.

This is a course in technical mathematics designed to prepare the student for future studies at the post-secondary level in technical mathematics. The course is also suitable for electrical apprentices who require credit at the intermediate and advanced levels.
Course Content — Algebraic operations, factoring, linear and quadratic equations; trigonometry, solution of right angle and oblique triangles; logarithms and vectors.

MATHEMATICS I — A.T.E.C. Program (Approved)

Offered during Fall, Winter and Spring Terms

MATH 100 **Fee: $30.00, 60 hours, Campus CL**

Thursday, 7:00 to 10:00 p.m.

Course Content — Computations with measured quantities; exact and approximate numbers, scientific notation, analysis of error, slide rule and tables.
Algebra: Linear functions, systems of linear functions, determinants, quadratic functions.
Logarithms: Logarithmic and exponential functions, applications.
Trigonometry: Trigonometric functions, application to mechanical and electrical problems.
Analytical Trigonometry: Complex numbers, vector algebra.
Prerequisite: Grade 12 Mathematics; Math 132 or equivalent.

MATHEMATICS II — A.T.E.C. Program (Approved)

Offered during Fall, Winter and Spring Terms

MATH 200 **Fee: $30.00, 60 hours, Campus CL**

Tuesday, 7:00 to 10:00 p.m.

Course Content — Algebraic notations, binomial theorem; trigonometry; analytic geometry, the straight line, loci, conics, second degree equations;

differential calculus: limits, derivatives of product, quotient and power functions, rate of change, maxima and minima; integration: indefinite and definite integrals, areas under the curve, volumes of revolution.
Prerequisite: Math 100 or equivalent.

MATHEMATICS III — A.T.E.C. Program (Approved)

Offered during Fall, Winter and Spring Terms

MATH 900 **Fee: $30.00, 60 hours, Campus CL**

Monday, 7:00 to 10:00 p.m.

Course Content — Differential calculus: functional notation, gradients, limiting value, differentiation from first principles, maxima and minima, differentiation of products and quotients of trigonometric functions with application to angular velocity and acceleration, simple harmonic motion, and electrical problems; integral calculus: relationship between differentiation and integration, the definite integral, areas and volumes by integration, integration of trigonometric functions, centre of gravity and centroids with applications, application of calculus to problems encountered in related technology.
Prerequisite: Math 200 or equivalent.

MATHEMATICS IV — A.T.E.C. Program (Approved)

Offered during Fall, Winter and Spring Terms

MATH 901 **Fee: $30.00, 60 hours, Campus CL**

Monday, 7:00 to 10:00 p.m.

Course Content — Differentiation of exponential and logarithmic functions with applications related to engineering problems; moments of inertia, radius of gyration, second moment of area; the rod, rectangle, disc and cylinder; parallel axis theory; perpendicular axis theory; review of centre of gravity and centroids; theorems of Pappus; standard methods of integration, such as substitution, trigonometric identities, partial fractions and integration by parts; radius of curvature, lengths of curves; expansion series; Taylor's and MacLaurin's Theorem; differential equations; simple differentiation equations of the first and second order; complex numbers (included as required for students specializing in Electrical or Electronic Technology).
Prerequisite: Math 900 or equivalent

STATISTICS I — A.T.E.C. Program (Approved)

Offered during Fall, Winter and Spring Terms

MATH 903 **Fee: $30.00, 60 hours, Campus CL**

Tuesday, 7:00 to 10:00 p.m.

Course Content — Introduction to statistics: data collection and presentation; probability concepts; frequency distributions and measures of central tendency; standard deviation; curve fitting; sampling; average and range control charts; quality control concepts.
Prerequisite: Math 900 or equivalent

APPLIED COMPUTER PROGRAMMING

MATH 120 **Fee: $30.00, 60 hours, Campus T**

Tuesday and Thursday, 7:00 to 10:00 p.m.

This course is designed to train persons in the programming and use of computers for computational problem-solving in technician and technology appli-

cations.
Content includes use of terminals, punched and tape-stored programmes, computer language, Fortran, computer hardware and software, flow charting, time sharing, typing and keyboard manipulation using lumisonic techniques.
Prerequisite: Math 100 or equivalent.

CHEMISTRY (General) — A.T.E.C. Program (Approved)
CHEM 100 Fee: $30.00, 60 hours, Campus CL
Monday, 7:00 to 10:00 p.m.

Course Content — Methods of chemistry: physical and chemical changes, chemical terminology. Organic chemistry: structure and reactions of common aliphatic groups. States of matter: gas laws, partial pressure. Nuclear chemistry: basic nuclear particles, isotopes, radioactivity, half life, radioisotopes and uses. Equilibrium: rate of reaction, reversibility, LeChatelier's Principle, equilibrium constant, solubility as an equilibrium process, methods of expressing solubility and concentration, ion exchange. Acidimetry and hydrolysis: definitions pH, indicators, titrations, relation to oxidation and reduction. Electro-chemistry: electrolysis, Faraday's Law, electro-chemical series, corrosion.

CHEMISTRY (Polymer) — A.T.E.C. Program (Approved)
CHEM 210 Fee: $45.00, 90 hours, Campus CL
Thursday, 7:00 to 10:00 p.m.

Course Content — The chemistry and physics of natural and synthetic polymers covering the following topics: molecular forces and chemical bonding, molecular weight and its distribution, configurations and conformations of polymer chains, morphology, condensation and addition polymers, copolymers, methods for determining molecular weight of polymers, structure of polymers, copolymers, structure of polymer molecules, how structure determines properties of polymers, testing and degradation of polymers, theory of polymers. Emphasis will be placed on common plastic materials. Practical work in the laboratory.
Prerequisite: Chem 100

APPLIED PHYSICS (Technical)
PHYS 133 Fee: $30.00, 60 hours, Campus CL
Monday, 7:00 to 10:00 p.m.

Air — Physical and chemical properties, pressure and vacuum, measurement of pressure, the barometer, the manometer, absolute pressure, gauge pressure.
Water — Physical and chemical properties, density and specific gravity, calculation of pressure at a depth, capillarity, pH factor.
Heat — Temperature scale, heat transmission, radiation, convection, conduction, the B.T.U. latent heat, coefficient of expansion, mechanical equivalent of heat, heat loss and prevention.
Gas laws — Expansion and compression of gases, Boyle's Law, vacuum pump, the compression pump.
Hydraulics — Fluids under pressure, action of pressure pumps, action of the venturi, the water hammer.
Properties of materials — Basic metallurgy, ferrous and non-ferrous metals, heat treatment.
Machines — Principles, efficiency, levers, inclined plane, gear drives, belt and chain drives.
Work energy and power — Units of energy and power, horsepower.
Strength of materials — Stress and strain, safety factor, Young's Modulus.
Prerequisite: Grade 10 or equivalent.

PHYSICS I — A.T.E.C. Program (Approved)
PHYS 100 Fee: $30.00, 60 hours, Campus CL
Tuesday, 7:00 to 10:00 p.m.

Properties of matter, mechanics — force, motion ,speed, velocity, acceleration, projectiles, momentum, simple machines, work, friction, elasticity; heat — temperature measurements, heat transfer, expansion, heat units, latent and super heat; sound waves; light — intensity, inverse square law, speed of light; ray optics, wave optics, including lenses, interference, diffraction and polarization.
Prerequisite: Math 100 or equivalent.

MODERN PHYSICS — A.T.E.C. Program (Approved)
PHYS 200 Fee: $30.00, 60 hours, Campus CL
Tuesday, 7:00 p.m. to 10:00 p.m.

Course Content — Electro Magnetism: electrostatics, electromagnetic waves and spectrum, atomic physics — periodic table (physical point of view). Emission and absorption of radiant energy, early structure of an atom, quantum theory, waves of particles, Bohr atom and line spectra, modern atomic model and Schroedinger wave equation. Physics of the solid state — crystalline solids, experimental methods of determining crystal structure, classification by structure, classification binding energy displayed, electronic structure of solids. Structure and behaviour of metals, structure and behaviour of semi-conductors, semi-conductor devices, nuclear physics.
Prerequisite: Math 900 and Phys 100

MECHANICS I — A.T.E.C. Program (Approved)
MECH 100 Fee: $30.00, 60 hours, Campus CL
Monday, 7:00 to 10:00 p.m.

Statics — basic principles of statics; coplanar, parallel and concurrent force systems; friction; centroids and centres of gravity; second moments of areas. Dynamics — basic principles, rectilinear motion, work, energy and power, impulse, momentum, impact.
Prerequisite: Math 100 or equivalent (prior to or concurrent with Mechanics I).

MECHANICS II — A.T.E.C. Program (Approved)
MECH 200 Fee: $30.00, 60 hours, Campus CL
Monday, 7:00 to 10:00 p.m.

Statics — Review of force systems — coplanar, non-coplanar, parallel, non-coplanar concurrent, non-coplanar non-concurrent. Friction. Dynamics — relative velocity; torque, angular motion and energy; motion in a circular path; simple harmonic motion; pressure of liquids; flow of water. Deriving equations of motion and fluids by using calculus notation.
Prerequisite: Mech 100 and Math 900

MECHANICS OF MATERIALS I — A.T.E.C. Program (Approved)

MECH 110 **Fee: $30.00, 60 hours, Campus CL**

Thursday, 7:00 to 10:00 p.m.

Mechanical properties and testing; unit stress and strain; beam type members — statically determinate; beam type member design; deflection due to bending; thin cylinders and joints; resilience; torsion; combined stresses.
Prerequisite: Math 200 and Mech 100

MECHANICS OF MATERIALS II — A.T.E.C. Program (Approved)

MECH 210 **Fee: $30.00, 60 hours, Campus CL**

Tuesday, 7:00 to 10:00 p.m.

Fatigue and stress concentration, statically determinate members, statically indeterminate members, properties of materials, columns, combined stresses, thick walled and compound cylinders.
Prerequisite: Mech 110 and Math 900

Educational Media Courses

AV 902 Audio Visual Workshop
AV 904 Audio Visual Photography
AV 905 Creative Film Workshop
AV 907 Audio General

EDUCATIONAL MEDIA TECHNOLOGY

AUDIO VISUAL WORKSHOP

AV902 **Fee: $60.00, 60 hours, Campus K**

Thursday, 7:00 to 10:00 p.m.

An intensive course for the acquisition of skills in the preparation of A/V materials. This course is suitable for the novice as well as A/V technicians who are already working in this field and who wish to acquaint themselves with the latest techniques. (90% practical work)

AUDIO VISUAL PHOTOGRAPHY

AV904 **Fee: $60.00, 60 hours, Campus K**

Monday, 7:00 to 10:00 p.m.

Designed to provide the beginner with a knowledge of the how and why of photography and the advanced with a better understanding of the elementary principles of the photographic processes. A comprehensive approach to photographic optics and exposure, emulsions, filters and lighting, film and print processing and camera techniques.

CREATIVE FILM WORKSHOP

AV905 **Fee: $60.00, 60 hours, Campus T**

Tuesday, 7:00 to 10:00 p.m.

An overview of 16mm and 8mm film production. Designed to give the student insight and practice in lighting, shooting, sound mix, animation and editing. Guest lecturers and demonstrations by experts from the film industry.

AUDIO GENERAL

AV907 **Fee: $60.00, 60 hours, Campus T**

Wednesday, 7:00 to 10:00 p.m.

An introduction to audio techniques; useful to home hobbyists as well as to persons using this medium in education and industry.

Applied Arts Courses

DENTAL TECHNICIAN

DENT 900	Complete Denture Prosthesis
DENT 901	Partial Denture Construction
DENT 902	Orthodontics
DENT 903	Crown and Bridge Work
DENT 904	Ceramics and Ceramics to Metal
DENT 905	Applied Science (Dental Materials)
EC 902	Business Management

JEWELLERY ARTS

JWL 900	Gemmology
JWL 901	Jewellery Making
JWL 902	Jewellery Making (enamelling)
JWL 903	Jewellery Making (lapidary)
JWL 904	Jewellery Making (silversmithing)

APPLIED ARTS

DENTAL TECHNICIAN

Fee: $45.00, 90 hours, Campus CL, 7:00 to 10:00 p.m.

DENT 900	Complete Denture Prosthesis
DENT 901	Partial Denture Construction
DENT 902	Orthodontics
DENT 903	Crown and Bridgework
DENT 904	Ceramics and Ceramics to Metal
***DENT 905**	Applied Science (Dental Materials)
***EC 902**	Business Management

These courses are offered to technicians who are working at present in a dental laboratory or for a dentist. They cover the work as it is presented in our Dental 100 Day Course. Theory and practical work in these courses are offered for 3-hour sessions each evening.

*Courses opposite which an asterisk appears are compulsory for students who are working toward the George Brown part-time certificate.

Monday	Dent 904	Ceramics and Ceramics to Metal
Tuesday	Dent 901	Partial Denture Construction
	Dent 900	Complete Denture Prosthesis
Wednesday	Dent 902	Othodontics
Thursday	Dent 903	Crown and Bridgework

Applied Science (Dental Materials), Dent 905, and Business Management, EC 902, will also be offered in 1972-1973.

Every attempt will be made to provide each student with the instruction and experience he most needs on an individual basis.

Specified nights are subject to change, depending on the availability of instructors for the various courses.

JEWELLERY ARTS

GEMMOLOGY

JWL 900 **Fee: $30.00, 60 hours, Campus CL**

Tuesday, 7:00 to 10:00 p.m.

Prerequisite: Applicants may either be employed in the jewellery industry or be interested in jewellery design as a hobby.

This course is offered in close co-operation with the Gemmological Association of Great Britain. The course is taken during two successive winters and upon successful completion of the two examinations the Fellowship of the Association will be granted.

Materials and books $100.00 per session.

JEWELLERY MAKING

JWL 901 **Fee: $30.00, 60 hours, Campus CL**

Monday, Tuesday, Wednesday and Thursday, 7:00 to 10:00 p.m.

Prerequisite: Currently employed in the jewellery industry or hobbyists.

Course Content — Planishing, hard soldering, finishing and polishing of precious metals, elementary jewellery repairs, shaping and forming settings for coloured stones and pearls, transferring designs to metals, cuttlefish casting, centrifugal casting, making models for fast production methods, handmaking of rings, brooches, pendants, earrings and bracelets.

JEWELLERY MAKING (Enamelling)

JWL 902 **Fee: $30.00, 60 hours, Campus CL**

Monday and Thursday, 7:00 to 10:00 p.m.

The study and practice of various techniques in the use of vitreous enamels, such as cloisonne, plique-ajour and champleve, on copper and fine silver, with emphasis on creative design and setting of delicate pieces into jewellery. For beginner and experienced student. Individual instruction giving the opportunity to the student to develop skills at his own pace.

JEWELLERY MAKING (Lapidary)

JWL 903 **Fee: $30.00, 60 hours, Campus CL**

Wednesday, 7:00 to 10:00 p.m.

Prerequisite: For those who are interested in cutting and polishing gem stones.

Course Content — Cutting gem material with diamond saw, grinding and lapping practice, sanding and polishing gem material, materials used for polishing and their uses, dopping procedure, orientation of gem stones, selecting rough material, theory of facet cutting, comparative hardness of materials.

JEWELLERY MAKING (Silversmithing)

JWL 904 **Fee: $30.00, 60 hours, Campus CL**

Thursday, 7:00 to 10:00 p.m.

Prerequisite: Currently employed in the jewellery industry or hobbyists.

Course Content — The metal, the silversmith's appliances; malleability, fusibility and soldering; exercise bowls, boxes, serviette rings, beakers; teapot, raised and hammered from the blank; coffee pot with cast spout and handle; the decoration of silverwork on chasing, and on pierced work.

Architectural Technology Courses

CARPENTRY

CAR 900	Cabinet-Making
CAR 901	Carpentry I
CAR 902	Carpentry II

MASONRY

MAS 900	Bricklaying

PLUMBING

PLUM 900	Plumbing Basic
PLUM 901	Plumbing Intermediate
PLUM 902	Plumbing Qualification
PLUM 903	Plumbing Design Engineering I
PLUM 906	Plumbing Design Engineering II
PLUM 904	Plumbing Design and Installation

SHEET METAL

SM 900	Sheet Metal Pattern Drafting — Part I
SM 901	Sheet Metal Pattern Drafting — Part II
SM 904	Sheet Metal Pattern Drafting — Part III
SM 902	Sheet Metal Theory I
SM 905	Sheet Metal Theory II
SM 906	Sheet Metal Theory III
SM 903	Sheet Metal Design and Installation

STEAMFITTING

STEA 902	Steamfitting Qualification
STEA 903	Steamfitting Pneumatic Controls — Part I

AIR CONDITIONING

AIR 900	Air Conditioning Design
AIR 901	Air Conditioning Design
AIR 902	Air Conditioning Control
AIR 904	Air Conditioning Design
AIR 905	Air Conditioning Residential and Small Commercial

APPLIANCES

AP 900	Gas Appliances
AP 902	Propane Gas
AP 903	Appliance Servicing, Part I (Electrical Fundamentals and Small Appliances)
AP 904	Appliance Servicing, Part II (Domestic Refrigeration)
AP 905	Appliance Servicing, Part III (Laundry Equipment)
AP 906	Industrial Process Controls

HEATING

HT 130	Oil Burner Part I
HT 131	Oil Burner Part II
HT 140	Gas Fitter (Pre-License)
HT 900	Warm Air Heating and Air Conditioning (Domestic)
HT 901	Commercial and Industrial Oil Burners
HT 902	Commercial and Industrial Gas

REFRIGERATION

REF 900	Refrigeration Part I — Basic
REF 901	Refrigeration Part II — Intermediate
REF 902	Refrigeration Part III

BUILDING CONSTRUCTION

ARCH 201	History of Architecture
CO 101	Quantity Surveying (Part I) and Building Construction Estimating
CO 105	Principles of Concrete
CO 901	Construction Methods and Materials (Building Construction)
CO 904	Contract Planning and Control for the Superintendent

BLUEPRINT READING

CO 905	Blueprint Reading for Mechanical/Electrical Construction Trades
DR 10/20/131	Blueprint Reading for the Construction Trades

DRAFTING & DESIGN

DR 900	Architectural Drafting, Part I
DR 901	Architectural Drafting, Part II
STR 122	Structural Steel Design and Detailing, Part I
STR 218	Reinforced Concrete Design
STR 900	Structural Design — Basic

SURVEY

SURV 101	Plane Surveying
SURV 201	Advanced Plane Surveying
SURV 204	Legal Surveying

STATIONARY ENGINEERING

MAR 900	Stationary Engineering 3rd & 4th class
MAR 901	Stationary Engineering 2nd class

ARCHITECTURAL TECHNOLOGY

CABINET-MAKING

CAR 900 **Fee: $30.00, 60 hours, Campus CL**
Tuesday, 7:00 to 10:00 p.m.

Prerequisite: Familiarity with the fundamentals of cabinet making or woodworking machinery.
Course Content — Conditioning and use of hand tools and machines, joints and methods used in cabinet making, layout and design.

CARPENTRY I

CAR 901 **Fee: $30.00, 60 hours, Campus CL**
Thursday, 7:00 to 10:00 p.m.

Prerequisite: Proof of work experience in the construction industry.
Course Content — House framing and roofing, National Building Code.

CARPENTRY II

CAR 902 **Fee: $30.00, 60 hours, Campus CL**
Wednesday, 7:00 to 10:00 p.m.

Prerequisite: Carpentry I.
Course Content — Basic stair design and layout, concrete practice, supervisory responsibilities.

BRICKLAYING

MAS 900 — **Fee: $30.00, 60 hours, Campus CL**
Thursday, 7:00 to 10:00 p.m.

Prerequisite: This course is for tradesmen interested in improving and upgrading their skills and also for laymen who are interested in the trade.
Course Content — Bonds, preparation of mortars, layout of different types of walls, piers, pilasters; tools and equipment; types of bricks with characteristics and sizes; sand, lime, and cement; methods of storage; preparation of mortars in cold weather.

PLUMBING BASIC

PLUM 900 — **Fee: $30.00, 60 hours, Campus CL**
Wednesday, 7:00 to 10:00 p.m.

Course Content — Measuring pipe, pipe materials, drainage terms, fundamentals of drainage design, stack terms, footings and terminals, traps and trap seal loss, vents and venting, wastes, sizing, prohibited fittings and connections.

PLUMBING INTERMEDIATE

PLUM 901 — **Fee: $30.00, 60 hours, Campus CL**
Wednesday, 7:00 to 10:00 p.m.

Course Content — Stack, wet loop and circuit venting, stack elevation work, grease and oil interceptors, sewage tanks, floor drains, drain plans, water services and meters, B.T.U.'s, pressures and heads.

PLUMBING QUALIFICATION

PLUM 902 — **Fee: $30.00, 60 hours, Campus CL**
Tuesday and Thursday, 7:00 to 10:00 p.m.

This is designed as a refresher course in general plumbing theory and code (Provincial) for those required to write the Ontario Certificate of Qualification examination.

PLUMBING DESIGN ENGINEERING I

PLUM 903 — (not offered 1972/73)

PLUMBING DESIGN ENGINEERING II

PLUM 906 — **Fee: $30.00, 60 hours, Campus CL**
Tuesday, 7:00 to 10:00 p.m.

This course will provide a more in-depth engineering approach to plumbing design and will familiarize the participants with criteria applicable to the building trends of today. High rise stack design, the sovent system and the development of water booster systems are some topics of this proposed new course. It is also thought of as a continuation of the previously offered Plumbing Design Engineering Course with emphasis on more advanced design methods and application.
Minimum Requirements — Grade 12 or successful completion of Plumbing Design Engineering I.

PLUMBING DESIGN AND INSTALLATION

PLUM 904 — **Fee: $30.00, 60 hours, Campus CL**
Tuesday and Thursday, 7:00 to 10:00 p.m.

This course is designed for those wishing to prepare themselves for the responsibility of a master plumber.
Prerequisite: Journeyman's license or Ontario Certificate of Qualification.
Course Content — Review of legislation relevant to the construction industry. Examination discussion and interpretation of the Ontario Plumbing Code. Mathematics and physics are necessary to understand design problems. Discounts, overhead and profit applications.

SHEET METAL PATTERN DRAFTING — Part I

SM 900 — **Fee: $30.00, 60 hours, Campus CL**
Monday, 7:00 to 10:00 p.m.

This course is designed primarily for apprentices who require upgrading. The layout method is predominantly in parallel line, with some radial line development.

SHEET METAL PATTERN DRAFTING — Part II

SM 901 — **Fee: $30.00, 60 hours, Campus CL**
Tuesday, 7:00 to 10:00 p.m.

The material covered in this course stresses radial line development, with some parallel line of flat surfaces and is intended to assist the apprentice to upgrade to the intermediate level.

SHEET METAL PATTERN DRAFTING — Part III

SM 904 — **Fee: $30.00, 60 hours, Campus CL**
Thursday, 7:00 to 10:00 p.m.

This level of pattern drafting covers the triangulation method of development. The course is geared to apprentices who require this training for upgrading purposes.

SHEET METAL THEORY I

SM 902 — **Fee: $20.00, 30 hours, Campus CL**
Monday, 7:00 to 10:00 p.m.

The material covered in this course is designed to upgrade basic apprentices and is the first part of a three-part program for those wishing to prepare for the certificate of qualification examination.

SHEET METAL THEORY II

SM 905 — **Fee: $20.00, 30 hours, Campus CL**
Tuesday, 7:00 to 10:00 p.m.

This course is a continuation of Sheet Metal Theory I. It can be taken independently for upgrading in the apprenticeship training program.

SHEET METAL THEORY III

SM 906 — **Fee: $20.00, 30 hours, Campus CL**
Thursday, 7:00 to 10:00 p.m.

This course is a continuation of Sheet Metal Theory II. The material covers

the advanced area of theory in the Provincial Apprenticeship Training Program and is the last part of the three-part program for certificate of qualification study.

SHEET METAL DESIGN AND INSTALLATION

SM 903 **Fee: $30.00, 60 hours, Campus CL**

Monday and Wednesday, 7:00 to 10:00 p.m.

This course is designed for those who wish to prepare themselves for the responsibilities of a master sheet metal worker.
Prerequisite: Currently employed in the sheet metal industry with a journeyman standing.
Course Content — Labour legislation in relation to the construction industry — city bylaws, underwriters, definition of terms applied to heating and air conditioning, use of N.W.A. and A.C.A. manuals for heat loss and heat gains, pipe sizing and location of outlets and inlets in residential installation, types of fans, air flow and types of instrumets used, calculations in ventilation requirements, heating and pipe sizing by velocity, use of charts and tables.

STEAMFITTING QUALIFICATION

STEA 902 **Fee: $30.00, 60 hours, Campus CL**

Tuesday and Thursday, 7:00 to 10:00 p.m.

Offered as a refresher course in general steamfitting theory for those required to write the Certificate of Qualification examination.

STEAMFITTING PNEUMATIC CONTROLS — Part I

STEA 903 **Fee: $30.00, 60 hours, Campus CL**

Monday, 7:00 to 10:00 p.m.

This course is designed for journeymen steamfitters who wish to broaden their knowledge in this specialized field.
Course Content — Elements of control, advantage and performance of pneumatic controls, control drawings, pipe installations, control theory, control applications, control adjustments, air compressors, maintenance of controls.

AIR CONDITIONING DESIGN

AIR 900 **Fee: $45.00, 90 hours, Campus CL**

Monday, 7:00 to 10:00 p.m.

This course is designed to cover the basic theory and application of air conditioning system design. It is offered for persons who have an interest in the heating and cooling of buildings and wish to acquire a working knowledge of the modern methods used for the design of air conditioning systems for residential and small commercial buildings.
Prerequisite: Applicant should have a reasonable knowledge of mathematics and English at the grade X level.
Course Content — Body comfort, air cycles; refrigeration cycle; heat sources and characteristics; psychrometric terms, chart and basic psychrometric processes; cooling and heating load calculations for residences by H.R.A. Manual — J and air conditioning load estimating by ASHRAE methods for small commercial buildings; air distribution, duct design (residential) by HRA Manuals and for commercial application by the Equal Friction Chart; selection and application of self-contained package air conditioning equipment; air conditioning controls; balancing air conditioning systems.

AIR CONDITIONING DESIGN

AIR 901 **Fee: $45.00, 90 hours, Campus CL**

Tuesday, 7:00 to 10:00 p.m.

This course is designed for people who wish to have a working knowledge of designing air conditioning systems.
Prerequisite: Air 900 or people presently employed in the air conditioning industry.
Course Content — Influence of temperature, humidity and air motion on comfort; review of basic principles; components of an air conditioning system; behaviour of air vapour mixtures; psychrometric chart; sensible and latent heat; dehumidifying processes as related to designing of air conditioning systems; heating and cooling load calculations from internal and external sources; room air distribution and air duct design, using equal friction, velocity reduction and static regain methods; cooling coil performance and selection.
All terms and calculations are based on accepted practices ASHRAE.

AIR CONDITIONING CONTROL

AIR 902 **Fee: $45.00, 90 hours, Campus CL**

Wednesday, 7:00 to 10:00 p.m.

Prerequisite: AIR 901 or equivalent.
This course is designed to cover the basic theory and application of automatic controls as applied to heating, ventilating and air conditioning systems. It is of practical use to engineers, technologists and draftsmen employed with consulting engineers, contractors and automatic control manufacturers.
Course Content — Introduction to automatic control, fundamentals of measurement; electric, electronic and pneumatic control circuits and units. Selection of control valves and dampers, typical applications to radiation, central-fan heating, commercial refrigeration, fan-coil units, induction units and year-round air conditioning systems.

AIR CONDITIONING DESIGN

AIR 904 **Fee: $45.00, 90 hours, Campus CL**

Thursday, 7:00 to 10:00 p.m.

This course is designed to complement AIR 901 and for people with a substantial knowledge of pschrometrics and load calculations. This course explains the different types of cooling equipment available and shows how to select the proper equipment.
Prerequisite: Air 901 or people presently employed in the air conditioning industry with a strong background in load calculations and psychrometrics.
Course Content — Principles of mechanical refrigeration involving behaviour of refrigerants; tables, pressure enthalpy diagrams, refrigeration effect, compressor cycle, subcooling volumetric efficiency; components, functions and selection of air handling equipment; control principles and methods for all air systems; need for zoning; reciprocating refrigeration equipment; centrifugal refrigeration equipment; absorption refrigeration equipment; heat pump package; heat ejection equipment; large package equipment; water chilling equipment; water systems and piping; refrigerant piping and systems; a project design and selection problem.

AIR CONDITIONING RESIDENTIAL AND SMALL COMMERCIAL

AIR 905 **Fee: $30.00, 60 hours, Campus CL**

Monday, 7:00 to 10:00 p.m.

This course is designed to cover sales, design, selection, installation and service of mechanical air cooled air conditioning equipment to 5 tons capacity for new and existing building installations.
Prerequisite: Applicants should be employed in the heating or air conditioning industry as journeymen or equivalent.
Course Content — Refrigeration definitions, cycle compressors, condensers, evaporators, tubing and connections, safety, instruments, electric motors, electrical applied to refrigeration motors, electrical circuits, certified equipment, predicting and controlling sound levels, winter operation, selection of equipment, estimating, installation start-up, air problems and measurement, and service analysis.

GAS APPLIANCES

AP 900 **Fee: $30.00, 60 hours, Campus CL**

Monday and Thursday, 7:00 to 10:00 p.m.

Commencing February 1973

Prerequisite: Grade X or equivalent.
Course Content — Gas ranges, classification and types, gas range adjustment and servicing, tip burner adjustments, simmer adjustments, low temperature oven burner adjustments; oven heat control, broiler adjustments, burner valves, range pilots, by-pass flame adjustments, automatic gas range ovens, gas dryers, classification and types, gas dryer operation, dryer controls, thermostat, timer, door switch, solenoid valve, warp safety switch, dryer installation, gas connection, exhaust system, electrical systems, schematic wiring diagrams, circuit testing and fault finding, miscellaneous appliances, gas refrigerators, gas-fired incinerators, gas lamps, LP conversion.

PROPANE GAS

AP 902 **Fee: $30.00, 60 hours, Campus CL**

Wednesday, 7:00 to 10:00 p.m.

This course is designed to prepare the student to write the examination for the Propane Gas Fitter's License.
Prerequisite: Gas fitter's license for natural gas.
Course Content — Properties of propane gas, basic requirements for field-approved appliances, propane piping and tubing requirements, review of ventilation and combustion air, general requirements for appliances, storage and handling, cylinder filling, location and storage, propane tanks, accessories and equipment, transports and tank trucks and the transportation of propane, propane as an engine fuel, vaporizers, indirect and direct fired cylinder systems for highway mobile vehicles, review of basic domestic gas burner controls and heating system, review of the domestic hot water heater.

APPLIANCE SERVICING — Part I
(Electrical Fundamentals and Small Appliances)

AP 903 **Fee: $30.00, 60 hours, Campus CL**

Tuesday, 7:00 to 10:00 p.m.

Prerequisite: Grade X or satisfactory equivalent.

Course Content — Nature of electricity, basic electrical quantities, Ohm's Law and its application, electrical circuits, magnetism and electromagnetism, electrical circuitry and fault finding, motors, power and heating effects, electrical measuring instruments, various switching devices, theory and repair of small appliances, ranges.

APPLIANCE SERVICING — Part II (Domestic Refrigeration)

AP 904 **Fee: $30.00, 60 hours, Campus CL**

Wednesday, 7:00 to 10:00 p.m.

Prerequisite: Grade 10 or equivalent.
Course Content — Fundamentals, compression system of refrigeration, refrigerants, liquid feed devices, evaporators, compressors, condensers, electric motor controls, defrosting methods, food preservation, evaluating and charging, leak testing, dismantling and assembling procedures for refrigerators and air conditioners, circuit tracing, fault finding, service analysis.

APPLIANCE SERVICING — Part III (Laundry Equipment)

AP 905 **Fee: $30.00, 60 hours, Campus CL**

Tuesday, 7:00 to 10:00 p.m.

Prerequisite: Satisfactory completion of AP 903 or equivalent.
Course Content — Theory and operation of wringer and automatic washers, dryers, and dishwashers; fault finding and repair procedures, circuit tracing, service analysis.

INDUSTRIAL PROCESS CONTROL

AP 906 **Fee: $30.00, 60 hours, Campus CL**

Thursday, 7:00 to 10:00 p.m.

Prerequisite: Gas fitter's license or propane license.
Course Content — Combustion flame safeguard controls, selection and application of heating and process controls, theory and application of the sensing devices of the various controls.

OIL BURNER — Part I

HT 130 **Fee: $20.00, 30 hours, Campus CL**

Tuesday, 7:00 to 10:00 p.m.

This course consists of approximately 40% theory and 60% shop, and is designed to prepare students to write examinations for Oil Burner Servicing License Class III.
Prerequisite: Grade X or working with associated trades.
Course Content — Types of domestic burners, parts of burners, filters, purposes of controls, settings for basic controls, fuel line problems, safety precautions, public relations, procedure for annual conditioning.

OIL BURNER — Part II

HT 131 **Fee: $30.00, 60 hours, Campus CL**

Monday, 7:00 to 10:00 p.m.

This course consists of approximately 50% theory and 50% shop. It is designed to prepare students to write the examination for Oil Burner Servicing License Class II.
Prerequisite: HT 130 or satisfactory experience.

Course Content — Theory of combustion, types of burners, fuel units, transformers, combustion changers, nozzles, tank installations, controls, heating systems, wiring diagrams, service procedures, regulations, public relations.

GAS FITTERS (Pre-License)

HT 140 **Fee: $30.00, 60 hours, Campus CL**

Tuesday, 7:00 to 9:00 p.m.

This course is designed for persons presently engaged in the heating or appliance field, who wish to obtain the necessary knowledge to write the Department of Energy and Resources management gas fitters examination.
Course Content — Properties of natural gas, fundamentals of combustion, gas piping, venting, appliance requirements, fundamentals of gas controls, conversion burners, commercial and industrial utilization, service problems, shop work.

WARM AIR HEATING AND AIR CONDITIONING (Domestic)

HT 900 **Fee: $45.00, 90 hours, Campus CL**

Monday, 7:00 to 10:00 p.m.

This course is provided for persons who have a general knowledge of house construction and the problems relating to domestic heating, and persons who may be connected with the heating industry who wish to acquire a working knowledge of the basic and more advanced techniques involved in the design and application of warm air heating and air conditioning systems and equipment.
Prerequisite: Grade X or equivalent.
Course Content — Heat loss and heat gain calculations by N.W.A. methods; components, equipment and controls for heating and cooling, system specifications, zoning and duct sizing by N.W.A. manuals — 'A' and No. 9, use of the Equal Friction Charts; uses of the Psychrometric Chart; humidification and dehumidification, the heat pump, air cleaning, system balancing.

COMMERCIAL AND INDUSTRIAL OIL BURNERS

HT 901 **Fee: $45.00, 90 hours, Campus CL**

Monday, 7:00 to 10:00 p.m.

This course is designed to prepare students to write the examination for Oil Burner License Class I.
Prerequisite: Oil Burner License Class II.
Course Content — Properties of commercial fuel oils, types of burners, preheaters, burner selections, fuel gas analysis, combustion control, non-programming sequence, programming schematic piping and wiring diagrams of combustion systems, tank installations, service analysis and regulations.

COMMERCIAL AND INDUSTRIAL GAS

HT 902 **Fee: $30.00, 60 hours, Campus CL**

Thursday, 7:00 to 10:00 p.m.

Prerequisite: Applicants should have a Gas Fitter's License and be employed in the industry.
Course Content — Fundamentals of combustion control, flame detection devices, firing systems, firing sequences and programs, logic diagrams, combustion controls, non-programming and programming, gas-fired conversion burners and boilers, boiler classification and terminology, input calculations, burner installations, fuel gas analysis and boiler efficiency, types of conversion burners and package boilers, required CGA valve train assemblies, schematic wiring diagrams, commercial hot water heaters, hot water heaters selection (calculations), mixing valves and accessories, gas controls, commercial hot water systems, miscellaneous equipment, multiple hot water heating units, infra red burners, make-up air heaters and gas-fired air conditioning.

REFRIGERATION — Part I (Basic)

REF 900 **Fee: $30.00, 60 hours, Campus CL**

Monday, 7:00 to 10:00 p.m.

Prerequisite: Applicants should be employed in the refrigeration industry or some allied trade.
Course Content — Refrigeration fundamentals and principles, compression system of refrigeration, properties of refrigerants, metering devices, expansion valves, evaporators, condensers, compressors, flow equipment, electric controls and control valves, lubrication, servicing (charging and evacuation), trouble shooting problems, shop demonstrations of silver brazing.

REFRIGERATION — Part II (Intermediate)

REF 901 **Fee: $30.00, 60 hours, Campus CL**

Thursday, 7:00 to 10:00 p.m.

Prerequisite: Successful completion of REF 900 or equivalent experience.
Course Content — Review of fundamentals, defrosting methods, compressor drives, instruments and meters, piping and refrigerant lines, pressure drops, heat calculations, refrigerated enclosures, survey of refrigeration applications, humidity in refrigeration, cooling load calculations, secondary refrigerants, liquid cooling, absorption systems, codes and by-laws, safety precautions.

REFRIGERATION — Part III

REF 902 **Fee: $45.00, 90 hours, Campus CL**

Tuesday, 7:00 to 10:00 p.m.

This course is designed to help prepare the student to write the Certificate of Qualification Examination.
Prerequisite: REF 901.
Course Content — Roof top condensers, piping systems, brines, pumps, chillers, centrifugal compressors, heat pumps, symbols, starts and contractors, packaged units, humidifiers, dehumidifiers, spray apparatus, ponds, air cleaning equipment, electronic and curtain; odour control, load calculation commercial and air conditioning, selection of equipment, pneumatic systems, control circuitry, trouble shooting, safety.

HISTORY OF ARCHITECTURE

ARCH 201 **Fee: $30.00, 60 hours, Campus CL**

Tuesday, 7:00 to 10:00 p.m.

A review of the historical background of architecture from primitive man to the contemporary, with emphasis on Egyptian, Byzantine, Greek, Roman, Gothic and Renaissance; field trips to Royal Ontario Museum and local architectural examples.

QUANTITY SURVEYING — Part I
AND BUILDING CONSTRUCTION ESTIMATING

CO 101 **Fee: $30.00, 60 hours, Campus CL**
Wednesday, 7:00 to 10:00 p.m.

This course is offered to small builders and those wishing to commence studies for Canadian Institute of Quantity Surveyors examinations. Successful completion of the course is recognized by C.I.Q.S. as an exemption from their examination Quantities I.
Course Content — Mathematics related to take off, general methods and procedures for taking off quantities for excavation; site work, concrete, formwork, reinforcement, brick and block masonry, and rough carpentry.
Textbook — Method of Measurement of Construction Works (current edition), published by Canadian Institute of Quantity Surveyors.

PRINCIPLES OF CONCRETE

CO 105 **Fee: $30.00, 60 hours, Campus CL**
Tuesday, 7:00 to 10:00 p.m.

A study of the overall cement and concrete manufacturing industry; the historical background and uses of concrete and concrete products; a detailed study of cement and its properties, concrete mix design, carrying out of standard quality control testing procedures, and compilation of results; the use, application and characteristics of soil cement.

CONSTRUCTION METHODS AND MATERIALS (Building Construction)

CO 901 **Fee: $30.00, 60 hours, Campus CL**
Thursday, 7:00 to 10:00 p.m.

Course Content — Brick material, masonry, bricks, tiles, etc., doors and windows, light wood framing, foundations, excavation and waterproofing.
Textbooks — Materials and Methods of Architectural Construction by Parker, Gay and MacGuire, published by John Wiley & Sons Inc.; Principles and Practice of Light Construction by R. C. Smith.

CONTRACT PLANNING AND CONTROL FOR THE SUPERINTENDENT

CO 904 **Fee: $20.00, 30 hours, Campus CL**
Thursday, 7:00 to 10:00 p.m.

This is essentially a practical course for the builder and superintendent in the use of systems to enable him economically and efficiently to carry out a construction contract.
Course Content — Scheduling methods and control including bar charts, cascade charts, critical path method, PERT and line of balance method. An introduction to the use of computers in these methods will be given.

BLUEPRINT READING FOR
MECHANICAL/ELECTRICAL CONSTRUCTION TRADES

CO 905 **Fee: $30.00, 60 hours, Campus CL**
Monday, 7:00 to 10:00 p.m.

Prerequisites: Persons employed in the construction industry and those studying in courses covering the various aspects of the industry.
Course Content — Plan reading and interpretation of architectural drawings,

heating and ventilation drawings, plumbing and drainage drawings and electrical drawing with respect to symbols, conventions, systems and general methods of installation.

BLUEPRINT READING FOR THE CONSTRUCTION TRADES

DR 10/20/131 **Fee: $30.00, 60 hours, Campus CL**
Tuesday, 7:00 to 10:00 p.m.

This course is intended for those working in all branches of the building trades and serves as a foundation for further study. It is also of much practical value to people engaged in many fields of business and industry who work in conjunction with the building trades. The content of the course includes the basic principles of drawings and a detailed study of blueprints.
Course Content — Orthographic projection, dimensions, pictorial drawing, drawing to scale, symbols and conventions, standard constructions, plan study, construction details, plan reading and interpretation.

ARCHITECTURAL DRAFTING — Part I

DR 900 **Fee: $30.00, 60 hours, Campus CL**
Tuesday, 7:00 to 10:00 p.m.

Course Content — Drafting equipment and procedure, Canadian symbols and conventions, foundation and floor plans for various types of construction, site plans, typical wall section, window details, door details, lathing and plastering details, stair details, fireplace and chimney details, simple structural steel and reinforced concrete details, freehand sketches.
Textbooks — Architectural Drawing and Light Construction by Muller, published by McGraw-Hill Publishing Co.; Architectural Drawing Standards, No. 33G97, by National Research Council, published by Queen's Printer, Ottawa.

ARCHITECTURAL DRAFTING — Part II

DR 901 **Fee: $30.00, 60 hours, Campus CL**
Tuesday, 7:00 to 10:00 p.m.

This course will be a continuation of Part I, with elaboration of topics and addition of new materials and methods to allow progression to the drawing of a complete set of working drawings for a small industrial building. The emphasis of this course is NOT on aesthetic or structural design but primarily on skill development required to produce a set of drawings to the highest standard of delineation.
Prerequisite: Successful completion of Part I, persons presently employed in the field of architectural drafting at the junior level, or graduates of Grade 12 architectural drafting.
Course Content — Planning drawing layout; presentation drawing in the form of rendered plan and elevation; drawing the plan or plans, elevations, full sections, details and structural drawings.
Textbook — Architectural Drafting and Light Construction by Muller, published by McGraw-Hill.

STRUCTURAL STEEL DESIGN AND DETAILING — Part I

STR 122 **Fee: $30.00, 60 hours, Campus CL**
Monday, 7:00 to 10:00 p.m.

Course Content — Force systems, force analysis of structures, stress and

strain, shear and moment in beams, design of simply supported beams — structural steel, plain material, fabrication, bolted and welded connections.
Textbook — Structural Steel Detailing/AISC Mechanics of Materials by I. J. Levinson, published by Prentice-Hall.

REINFORCED CONCRETE DESIGN

STR 218 **Fee: $30.00, 60 hours, Campus CL**
Tuesday, 7:00 to 10:00 p.m.

Course Content — Principles of mechanics, forces, stresses, moments of reactions, shear and bending moments, theory of bending and properties of sections. Concrete — manufacture of cement, properties and use of aggregates and additives and placement of concrete. Reinforcing — reinforcing bars, bending and bending schedules and reinforcing bar placement. Reinforced concrete design — stresses in reinforced concrete. Modulus of elasticity design, formulas for beams, diagonal tension and web reinforcement, bond, design of rectangular reinforced concrete beams, alternate design, web reinforcement for girders, design of T-beams, one-way solid slabs, load tables, design of ribbed slabs, design of stair slabs, design of independent footings.
National Building Code — interpretation, application.
Reference text — Simplified Design of Reinforced Concrete by Parker, Gay and MacGuire, published by John Wiley & Sons Inc.

STRUCTURAL DESIGN (Basic)

STR 900 **Fee: $30.00, 60 hours, Campus CL**
Tuesday, 7:00 to 10:00 p.m.

This course is of interest to the person who wishes a general information course rather than a detailed study of the latest structural design methods. It will contain basic principles pertaining to: reinforced concrete design with emphasis on the ultimate strength design; foundations and retaining walls, and analysis on types of foundations and retaining walls; structural steel design, relating to structural members and frames of structural steel components including the detail parts, welds, bolts, etc. required for fabrication and erection.
Reference texts: (1) N.R.C. Building Code, 5th edition, (2) A.C.I. Manual of Concrete Practice, (3) C.I.S.C. Manual of Steel Construction.

PLANE SURVEYING — A.T.E.C. Program (Approved)

SURV 101 **Fee: $30.00, 60 hours, Campus CL**
Tuesday, 7:00 to 10:00 p.m.

Prerequisite: MATH 100.
Course Content — Importance of surveying, correction for measured distances, use of simple distance-measuring equipment; measurement of angles, with transit; differential trigonometric, profile and cross-section levelling; type, adjustments and use of leevls, problems; methods of stadia, problems, topographical surveys, contour lines, direction of line, magnetic meridian and declination, isogonic chart, azimuth and bearing of a line, traverse surveys and computations, closing a traverse by latitudes and departures, traverse computations of topographic map; construction surveys, municipal surveys, grades, methods of setting grades; horizontal circular curves, theory, computations, field practice; demonstration of modern survey equipment.

ADVANCED PLANE SURVEYING

SURV 201 **Fee: $30.00, 60 hours, Campus CL**
Thursday, 7:00 to 10:00 p.m.

Prerequisite: SURV 101 or equivalent.
Course Content — Simple curves, vertical curves, curve intersections, transition curves, stadia surveying, route surveys, area surveys, optics, adjustments of instruments, photogrammetry, observation for meridian.

LEGAL SURVEYING

SURV 204 **Fee: $30.00, 60 hours, Campus CL**
Thursday, 7:00 to 10:00 p.m.

This course is of interest to land speculators, developers, property agents, real estate salesmen and survey personnel, and is designed to acquaint the individual with the various methods of land registration in Ontario.
Course Content — Registry office, land titles office, history and development; types of documents and plans; government acts, expropriation procedures, plans; methods of registration, legal transfer and general procedures; deeds; description of township offices.

STATIONARY ENGINEERING — 3rd and 4th Class

MAR 900 **Fee: $30.00, 60 hours, Campus CL**
Monday, 7:00 to 10:00 p.m.

These courses are orientated towards the students' successful participation in the Department of Labour's examinations as outlined under the Operating Engineers Act.
Prerequisite: 19 years of age.
Course Content — steam boilers including safety valves, water gauges and columns blowdown and scum valves, boiler construction, feed water admission treatment and conditioning, safe operation, maintenance and inspection.
Combustion: fuels, fuel burning and firing equipment and air supply.
Auxiliary equipments: feed water heaters, condensers, pumps, injectors and air compressors.
Refrigeration systems including safe operation and maintenance. Principles of electricity, operation and maintenance of motors, generators and transformers.

STATIONARY ENGINEER — 2nd Class

MAR 901 **Fee: $30.00, 60 hours, Campus CL**
Monday, 7:00 to 10:00 p.m.

Prerequisite: 3rd Class.
Course Content — steam boilers and accessories construction and maintenance with emphasis on operation, repair and inspection and testing; combustion, fuels, heat transfer.
Refrigeration theory, operation maintenance, repair and inspection. Air compressors, types, principles and safe operation of systems. Mathematical calculations relating: boiler performance, fuel combustion, draft, refrigeration performance, boiler construction, electricity and pumps.

Business and Commerce Courses

ACCOUNTING

ACC 100	Accounting I
ACC 101	Accounting II
ACC 202	Cost Accounting
ACC 152	Bookkeeping

MEDICAL TERMINOLOGY

ANAT 100	Medical Terminology

ADVERTISING & SALES

BC 102	Advertising
BC 900	Basic Principles of Advertising, Sales and Merchandising
BC 905	Improving Advertising Efficiency
BC 906	Purchasing

INVESTMENT

BC 907	Art and Antiques as Investments
BC 908	Bonds & Equity Investment

BUSINESS MACHINES

BM 148a	Business Machines (Bookkeeping Machines)
BM 173	Business Machines (Duplicating Machines)
BM 901	Business Machines (Comptometer a)
BM 902	Business Machines (Comptometer b)
BM 905	Dictaphone

MANAGEMENT

BUS 106	Pitman Script
BUS 900	Business Management I
BUS 901	Business Management II
BUS 902	Pesronnel Administration

DATA PROCESSING

EDP 70	Data Processing — Keypunch & Verifier
EDP 100	Basic Computer Concepts I
EDP 101	Basic Computer Concepts II
EDP 102	Basic Computer Concepts III

MARKETING

MARK 100	Marketing
MARK 201	The Sales Aspect of Marketing

OFFICE PRACTICE

OP 149a	Office Practice A
OP 149b	Office Practice B

SHORTHAND

SH 102	Legal Stenographic
SH 900	Refresher Course — Theory of Pitman Shorthand
SH 901	Shorthand — Advanced Speed Level
SH 903	"Take 30" — Theory
SH 904	"Take 30" — Elementary Speed
SH 905	"Take 30" — Intermediate Speed
SHF 149a	Forkner Shorthand — Theory
SHF 149b	Forkner Shorthand — Speed
SHM 100	Machine Shorthand — Theory
SHM 101	Machine Shorthand — Elementary Speed Level

SHM 200	Machine Shorthand — Intermediate Speed Level
SHP 100	Pitman Shorthand — Theory
SHP 101	Pitman Shorthand — Elementary Speed Level
SHP 200	Pitman Shorthand — Intermediate Speed Level

TYPING

TYP 152a	Typewriting A — (Beginning Typewriting)
TYP 152b	Typewriting B — (Advanced Typewriting)
TYP 900	Typewriting Basic — Lumisonic
TYP 901	Typing and Office Practice

BUSINESS AND COMMERCE

ACCOUNTING I

ACC 100 — **Fee: $30.00, 60 hours, Campus T**

Tuesday, 7:00 to 10:00 p.m.

Fundamental principles of accounting; the entire bookkeeping cycle, including journals, posting, preparation of trial balance, adjusting and closing entries and preparation of a post-closing trial balance; controlling accounts and specialized journals; a detailed study of accounts receivable, inventory valuation, fixed assets and depreciation and natural resources and depletion. and financial reports.

ACCOUNTING II

ACC 101 — **Fee: $45.00, 90 hours, Campus T**

Wednesday, 7:00 to 10:00 p.m.

Partnerships — formation, division of profits,admission of new partner, goodwill and revaluation of assets, dissolution and liquidation; limited companies — organization and operation, share capital transactions, retained earnings, dividends and reserves, extraordinary gains and losses, bonds payable and sinking funds; the voucher system; payroll accounting.

BOOKKEEPING

ACC 152 — **Fee: $30.00, 60 hours, Campus T**

Monday, 7:00 to 10:00 p.m.

NOTE: Credit subject for Canadian Institute of Quantity Surveyors.

Course Content — Starting a bookkeeping system, recording transactions affecting balance sheet amounts, recording transactions affecting income and expense amounts, the income statement and the balance sheet, journalizing, posting and taking a trial balance, the six-column work sheet, closing entries and post-closing trail balance, special journals and subsidizing ledgers, bank reconciliations, the eight-column work sheet with adjusting and closing entries, and financial reports.

COST ACCOUNTING

ACC 202 — **Fee: $30.00, 60 hours, Campus T**

Wednesday, 7:00 to 10:00 p.m.

The course is designed for students with an accounting standing equivalent to ACC 100 and 101 or for those who are currently engaged in the bookkeeping field in industry and who wish to study cost accounting.

Course Content — Basic concepts, fundamental principles, materials, labour, and overhead as applied to cost accounting; the above concepts and principles utilized in the solution of simple costing problems and cost accounting techniques employed for the solution of major financial cases.
Was formerly — Cost Accounting — ACC 902.

MEDICAL TERMINOLOGY

ANAT 100 **Two consecutive 15-week sessions, Campus T**
Fee: $20.00 per session, Tuesday, 7:00 to 9:00 p.m.

The purpose is to train those interested in the field of medical dictatyping or medical stenographic.
Prerequisite: None.
Course Content — Emphasis will be placed on terminology related to the structure and function of the various body systems, with some pathology. Reference will be made to nomenclature and therapeutic action of common drugs. There will be some laboratory work.

ADVERTISING

BC 102 **Fee: $30.00, 60 hours, Campus T**
Monday, 7:00 to 10:00 p.m.

An orientation course looking at advertising from the marketing, communications and consumer viewpoints. Stress will be placed on:
1. What advertising is, the position of advertising in our society, the psychology behind advertising.
2. Advertising as it exists in the framework of both marketing and communications.
3. A comprehensive study of the various types of media.
4. Advertising planning and management.

BASIC PRINCIPLES OF ADVERTISING, SALES AND MERCHANDISING

BC 900 **Fee: $45.00, 90 hours, Campus T**
Thursday, 7:00 to 10:00 p.m.

Prerequisites: Persons involved in or hoping to become involved in this intriguing field. A good knowledge of English is necessary.
Course Content — Can be divided into three parts under topics to be covered as follows:
1. Advertising — analyzing product; print, radio or TV, direct mail, mail order, liaison with merchandising, copy preparation for print media, radio as a powerful selling force in retail, the use of posters, outdoor media.
2. Selling — personnel development; the nature of the selling process, factors in the selling process, the customer, product knowledge, the approach, the presentation, the close, the creative factor in all aspects of retail selling.
3. Marketing — as a process, nature of consumption, customer motivation, the overall marketing picture, the retailing structure planning and standardization of products, factors in buying, selection of channels of distribution, price determination and factors in setting prices, sales by marketing function.

IMPROVING ADVERTISING EFFICIENCY

BC 905 **Fee: $30.00, 60 hours, Campus T**
Wednesday, 7:00 to 10:00 p.m.

An advertising management course designed to help businessmen improve the efficiency of their advertising dollars. Stress will be placed on:
1. The role of advertising in the marketing mix.
2. Establishing specific advertising objectives.
3. Budgeting, planning and management.
4. Measuring advertising effectiveness.
5. Consumerism, ethics and law.

PURCHASING

BC 906 **Fee: $30.00, 60 hours, Campus T**
Thursday, 7:00 to 10:00 p.m.

Many smaller Canadian companies are approaching the volume of business which requires the benefit of a trained purchasing agent.
Course Content — The responsibilities of the purchasing agent in relation to the organization. The study of value analysis. Quantity purchases in relation to inventory control and traffic.

ART AND ANTIQUES AS INVESTMENTS

BC 907 **Fee: $45.00, 48 hours, Campus T**
Monday, 7:00 to 10:00 p.m.

The course is designed for beginning and advanced collectors of art and antiques. It will also be of value to those operating antique businesses and to those who are involved in estate evaluations.
Course Content — Investment principles, sources of supply, the changing market place, expert opinions for identification of silver, oriental rugs, glass, furniture and 20th century art. Lecturers will vary according to the special fields and, where possible, either samples will be brought to the class or the class will go to local dealers and/or galleries.

BONDS AND EQUITY INVESTMENT

BC 908 **Fee: $30.00, 60 hours, Campus T**
Monday, 7:00 to 10:00 p.m.

This course covers the why, when, and how of investments in the equity market, the purpose of stock issues, stock options, Dow Jones and other significant indices, how to read financial statements and debentures, the operation of the stock exchanges, the role of the broker; portfolio evaluation and analysis together with portfolio management, utilizing case material.
ing machines:

BUSINESS MACHINES (Bookkeeping Machines)

BM 148a **Fee: $55.00, 120 hours, Campus T**
Monday and Wednesday, 7:00 to 10:00 p.m.

To introduce students to machine accounting procedures and to develop an operating speed which will be acceptable to industry.
Prerequisite: Grade 10 and a typewriting speed of at least 35 w.p.m.
Course Content — Instruction and practice in machine operation through

the use of pre-recorded tapes and practical exercises. Accounts receivable, accounts payable, journal distribution and payroll are taught, using the following machines.
National Cash Model 3300 — Burroughs Sensimatic Models F.1100, F.6100 — Olivetti-Underwood Model 1502 — Monroe-President Model 145B — Smith Corona Marchant Model 602.
(formerly BM 900)

BUSINESS MACHINES (Duplicating Machines)

BM 173 **Fee: $55.00, 120 hours, Campus T**

Monday and Wednesday, 7:00 to 10:00 p.m.

This course will acquaint the student with current duplicating procedures and techniques which are employed in today's modern office.
Prerequisite: Grade 10 plus an acceptable typewriting speed.
Course Content — Preparation of masters and stencils, using Xerox, typewriter and plate making equipment; line justification and error correction procedures; operational maintenance and techniques of the Xerox 914, offset press, mimeograph and spirit duplicator.

BUSINESS MACHINES (Comptometer a)

BM 901 **Fee: $55.00, 120 hours, Campus T**

Monday and Wednesday, 7:00 to 10:00 p.m.

For those wishing fast accurate comptometer operation ability in order to obtain employment in industry.
Prerequisite: Grade 10.
Course Content — Instruction and practice in addition, subtraction, multiplication and division, operating techniques, regular speed and progress tests; all practice material representative of today's work in industry

BUSINESS MACHINES (Comptometer b)

BM 902 **Fee: $55.00, 120 hours, Campus T**

Tuesday and Thursday, 7:00 to 10:00 p.m.

To develop a fast accurate comptometer operator who, upon completion of the course, will be employable in industry.
Prerequisite: BM 901 or equivalent.
Course Content — Advanced work in addition, subtraction, multiplication and division, operating techniques, regular speed and progress tests; all practice material representative of today's work in industry.

DICTAPHONE

BM 905 **Fee: $30.00, 60 hours, Campus T**

Monday and Wednesday, 7:00 to 10:00 p.m.

The purpose is to prepare the student to become an accredited dictaphone secretary, with an initial capacity of 60 fifteen-line letters a day.
Prerequisite: A thorough knowledge of business English, spelling and setup of letters (minimum of Grade XI) plus a typing speed of 45 w.p.m.
Course Content — Typing from dictabelt records put out by the Dictaphone Corporation.

PITMAN SCRIPT

BUS 106 **Fee: $45.00, 90 hours, Campus T**

Tuesday and Thursday, 6:00 to 9:00 p.m.

Pitman Script is a completely new system of fast writing which has been developed by a team of specialists. It is based on the twenty-six letters of the English alphabet and it uses only a few special signs for the most frequently occurring letters and words. This system is designed for those who want to write faster than is possible in ordinary longhand but who do not want to take the time or to make the necessary effort to learn a complete shorthand system; basic theory is mastered in only 30 hours.
Prerequisite: Grade 12 English or equivalent and at least 35 w.p.m. in typewriting.
Course Content — A presentation of the principles of the system together with dictation which is introduced from the first lesson.

BUSINESS MANAGEMENT I

BUS 900 **Fee: $30.00, 60 hours, Campus T**

Tuesday, 7:00 to 10:00 p.m.

This course will follow a combination of lectures, group discussions, and case studies.
Course Content — The organization structure and its relation to the behavioral sciences and communications; the decision-making process and decision theory, under risk and uncertainty.

BUSINESS MANAGEMENT II

BUS 901 **Fee: $30.00, 60 hours, Campus T**

Wednesday, 7:00 to 10:00 p.m.

Prerequisite: BUS 900.
Course Content — Planning analysis and control as related to marketing, finance, and organization theory. Advanced case studies, group discussions, and guest speakers will be used for advanced decision-making.

PERSONNEL ADMINISTRATION

BUS 902 **Fee: $30.00, 60 hours, Campus T**

Wednesday, 7:00 to 10:00 p.m.

The advent of technological change is altering our social and work environments; the effects of this change on personnel relations requires more extensive study and consideration by employers.
Prerequisite: Grade XII and some related business experience.
Course Content — The development of personnel departments to meet employee needs; the indicated shift in these needs; technological change and its effect on unions; group relations; work conditions; staff relations; upward mobile, indifferent, and ambivalent. Case studies, discussions, and intensive readings will be used in the discussion of these topics.

DATA PROCESSING — KEYPUNCH & VERIFIER

EDP 70 **Fee: $45.00, 90 hours, Campus T**

Monday and Wednesday, 7:00 to 10:00 p.m.

This course will bring the student to a high standard of accurate speed and machine familiarity so that the operator will be able to produce an acceptable

quantity of high quality work on the I.B.M. Keypunch and Verifier.
Prerequisite: Grade 10 plus 35 w.p.m. in typing and a pass mark on the I.B.M. Keypunch operator's test.
Course Content — 20 taped lessons prepared by I.B.M. for Keypunch Models 024, 026, 029, 059, and 056 Verifier; the operation and names of the various parts of the machines.

BASIC COMPUTER CONCEPTS I

EDP 100 **Fee: $45.00, 90 hours, Campus T**
Monday and Wednesday, 7:00 to 10:00 p.m.

The purpose is to provide an overview of business data processing which will prepare the student for further study in the areas of programming and systems planning.
Course Content — Survey of the history of automatic data processing; punched card data processing; modern business computers; central processing unit, levels of programming languages, software, particularly compilers, various I/O media and devices, batch processing versus online processing, applications, problem solving: algorithms, flowcharts, programming in BASIC using time-sharing terminals, visits to computer installations.

BASIC COMPUTER CONCEPTS II

EDP 101 **Fee: $45.00, 90 hours, Campus T**
Tuesday and Thursday, 7:00 to 10:00 p.m.

This course is designed to develop expertise in the use of problem-solving techniques and an awareness of the documentation standards required in a typical data processing department.
Prerequisite: Completion of EDP 100 and a satisfactory score on a programming aptitude test.
Course Content — Exercises in flowcharting and coding in BASIC, testing and debugging programmes; introduction to COBOL; case problems involving typical accounting applications; use of standard forms for presenting problems to the student, and standard format to be followed by the student in his documentation; operation of the computer in testing programmes.

BASIC COMPUTER CONCEPTS III

EDP 102 **Fee: $45.00, 90 hours, Campus T**
Tuesday and Thursday, 7:00 to 10:00 p.m.

The course examines computer programming and software principles and combines theory with practical experience, using FORTRAN.
Prerequisite: Completion of EDP 101 and a satisfactory score on a programming aptitude test.
Course Content — Introduction to T/S FORTRAN line numbers, statement numbers, continuation comments, integer and real numbers, constants, variables, specification statements, subprogrammes, subroutine principles, sorting techniques, loops, data files, and batch fortran.

MARKETING

MARK 100 **Fee: $30.00, 60 hours, Campus T**
Wednesday, 7:00 to 10:00 p.m.

Prerequisites: Grade XII or equivalent.

Course Content — Introduction to basic marketing concepts and practices as related to the consumer. The course will cover marketing terminology, controllable and non-controllable variables, target market identification by demographic and geographic segmentation.

THE SALES ASPECT OF MARKETING

MARK 201 **Fee: $30.00, 60 hours, Campus T**
Wednesday, 7:00 to 10:00 p.m.

Designed for students enrolled in marketing courses or with previous business sales experience, who can be more effective by a further study in this field.
Course Content — Sales planning, sales techniques, sales force management and development, techniques and methods of recruiting, and sales training; case studies to assist in developing those skills.
Was formerly — Salesmanship — BC 903

OFFICE PRACTICE A

OP 149a **Fee: $30.00, 60 hours, Campus T**
Monday and Wednesday, 7:00 to 10:00 p.m.

To familiarize the student with the requirements, the characteristics, and the organization of business offices and the duties most frequently performed. Lecture time is kept to a minimum and practical assignments are emphasized.
Prerequisite: 35 w.p.m. in typing.
Course Content — Business organization — classification of business and types of ownership; purchasing, sales and accounting routines; the stenographic, administrative and receptionist duties of a secretary; sources of information; reports; manuscript typing and proofreading; familiarization with the services — postal, telephone, telegraph, cable and wireless, and banking — used by employers; more advanced typing theory with emphasis on typing from corrected copy/manuscript work; typing of balance sheets and financial statements with insertions made in red; and memoranda.

OFFICE PRACTICE B (Stenographic)

OP 149b **Fee: $30.00, 60 hours, Campus T**
Tuesday and Thursday, 7:00 to 10:00 p.m.

Gives the student a thorough familiarization with filing techniques and other duties performed by secretaries. Lecture time is kept to a minimum and practical assignments are emphasized.
Prerequisite: 35 w.p.m. typing plus OP 149a or equivalent.
Course Content — Different types of filing systems and procedures involved in filing — preparatory filing steps, cross-referencing, etc. The emphasis in the filing instruction is on completing practical, office-type assignments. Familiarization with different office machines — reproduction processes and reproduction machines; dictating and transcribing machines. Emphasis is also on the personal work the student, as a secretary, might be called upon to perform for her employer and includes such items as travel arrangement — typing itineraries, secretarial duties, expense reports; preparing legal documents — affidavits, endorsements, wills, etc., arranging meetings — agendas, memos, minutes; and a general review of office standards, grooming and deportment.

LEGAL STENOGRAPHIC

SH 102 **Fee: $45.00, 90 hours, Campus T**

Monday, 6:00 to 9:00 p.m.

This course is offered to those with a good basic knowledge of shorthand, who wish to become legal stenographers.
Prerequisites: SHP 101 or equivalent, plus Grade 12 English or equivalent, and 45 w.p.m. in typewriting.
Course Content — Legal terms, dictation and transcription of legal letters; legal forms and documents.

REFRESHER COURSE — THEORY OF PITMAN SHORTHAND

SH 900 **Fee: $45.00, 90 hours, Campus T**

Tuesday and Thursday, 7:00 to 10:00 p.m.

Designed for those who have had Pitman shorthand in the past and require a quick review before going on to increased speed.
Prerequisite: Grade 12 English or equivalent; a reasonable knowledge of the theory.
Course Content — Quick review of the principles of Pitman shorthand, emphasis on facility in the use of short-forms, contractions, intersections and phrases.

SHORTHAND — ADVANCED SPEED LEVEL

SH 901 **Fee: $30.00, 60 hours, Campus T**

Saturday, 9:30 to 12:30 p.m.

This course is aimed at qualifying shorthand writers of all systems (Pitman, Machine, Gregg) for verbatim reporting positions. The following is a partial list of files open to verbatim reporters: Magistrates' Courts: County Division and Surrogate Courts; Supreme Court of Ontario; Exchequer Court of Canada; Admiralty Court; Juvenile and Family Courts; Special Examiners' Offices; House of Commons (Hansard); etc.
Prerequisite: The ability to write 120 w.p.m.
Course Content — Dictation of business letters, legal and literary matters, jury charges, court testimony, etc.; emphasis on the basic techniques required to attain high speeds in shorthand; high speed phrasing and short cuts.

TAKE 30 SHORTHAND

Take 30 is a simplified form of Pitman shorthand. It consists of 25 actual theory lessons, plus 5 review lessons. Many of the pitfalls that beset students using a conventional test are eliminated. For example, there are no left-right decisions to make about hooks; they all go on the same side. There are no reverse forms and there are only single signs for all consonants. Also the list of brief forms is considerably shorter than in the conventional form. As in the more conventional system, Take 30 is made up of three parts.

TAKE 30 — THEORY

SH 903 **Fee: $45.00, 90 hours, Campus T**

Tuesday and Thursday, 6:00 to 9:00 p.m.

In this level the theory of the system is thoroughly covered and a basis is laid for the development of speed.
Prerequisite: Grade 12 English or equivalent and a minimum of 35 w.p.m. in typewriting.
Course Content — A presentation of the principles of the system, together with extensive dictation, which begins at the very first lesson.

TAKE 30 — ELEMENTARY SPEED

SH 904 **Fee: $30.00, 60 hours, Campus T**

Tuesday and Thursday, 6:00 to 9:00 p.m.

This course is offered to those persons desiring to develop facility in writing Take 30 shorthand at speeds up to 80 w.p.m.
Prerequisite: Successful completion of theory level or equivalent, plus grade 12 English or equivalent and 45 w.p.m. in typewriting.
Course Content — Development of facility in writing and reading shorthand and transcribing notes at the typewriter.

TAKE 30 — INTERMEDIATE SPEED

SH 905 **Fee: $45.00, 90 hours, Campus T**

Tuesday and Thursday, 6:00 to 9:00 p.m.

The purpose of this course is to develop facility in writing shorthand of average commercial difficulty at speeds up to 120 w.p.m. and in transcribing from notes at the typewriter.
Prerequisite: Elementary speed level or equivalent and 50 w.p.m. in typewriting, plus grade 12 English or equivalent.
Course Content — Development of skill in writing and reading shorthand notes and practice in transcribing notes at the typewriter in acceptable, mailable form.

FORKNER SHORTHAND

Forkner shorthand is designed for speeds up to 120 w.p.m. It is a system which employs a combination of longhand characters and shorthand symbols. It has been developed on the premise that it is a waste of time and a burden on the memory to learn shorthand characters for sounds that can be rapidly and easily expressed by longhand characters which the learner can already make at high speeds. Where longhand characters are complicated or require a number of strokes to write, a symbol has been substituted.

FORKNER SHORTHAND — THEORY

SHF 149a **Fee: $45.00, 90 hours, Campus T**

Tuesday and Thursday, 7:00 to 10:00 p.m.

This level provides a basis for the development of speed in writing shorthand.
Prerequisite: Grade 12 English or equivalent and a minimum of 35 w.p.m. in typewriting.
Course Content — A presentation of the principles of the system, together with extensive dictation which begins as early as lesson 5.

FORKNER SHORTHAND — SPEED

SHF 149b **Fee: $45.00, 90 hours Campus T**

Monday and Wednesday, 7:00 to 10:00 p.m.

For persons desiring to develop facility in writing Forkner shorthand at speeds up to 100 w.p.m.

Prerequisite: Completion of theory level or equivalent, plus Grade 12 English or equivalent, and 45 w.p.m. in typewriting.
Course Content — Development of facility in writing and reading shorthand notes within the 3,000 word high-frequency range which makes up 97% of all ordinary dictation material; practice in transcribing notes at the typewriter.

MACHINE SHORTHAND

Machine shorthand or touch shorthand is a very modern and efficient system, utilizing a small, rugged, silent, non-electric machine which prints, at high speed, the familiar letters of the alphabet. The keyboard permits a number of letters, words and phrases to be printed at one stroke. With further practice, following the secretarial course in machine shorthand, the attainment of high speeds is possible; necessary in the fields of court reporting, reporting of commissions, conventions, meetings, arbitration hearings and so on.

MACHINE SHORTHAND — THEORY

SHM 100 **Fee: $55.00, 120 hours, Campus T**
Monday and Wednesday, 6:00 to 9:00 p.m.

To provide a basis for the development of speed in shorthand.
Prerequisite: Grade 12 English or equivalent.
Course Content — The basic fundamentals of the theory of machine shorthand, common short-forms and phrases. Dictation is introduced from the first lesson. By the end of the course considerable facility is acquired in note-taking from material of limited vocabulary.
(formerly SHM 149a)

MACHINE SHORTHAND — ELEMENTARY SPEED LEVEL

SHM 101 **Fee: $45.00, 90 hours Campus T**
Tuesday and Thursday, 6:00 to 9:00 p.m.

Offered to those persons desiring to develop facility in writing machine shorthand at speeds up to 80 w.p.m.
Prerequisite: SHM 100 or equivalent, plus grade 12 English or equivalent, and 45 w.p.m. in typewriting.
Course Content — Development of facility in writing and reading shorthand notes using simple commercial vocabulary; practice in transcribing notes at the typewriter in acceptable mailable form.
(formerly SHM 149b)

MACHINE SHORTHAND — INTERMEDIATE SPEED LEVEL

SHM 200 **Fee: $45.00, 90 hours Campus T**
Monday and Wednesday, 6:00 to 9:00 p.m.

To develop facility in writing shorthand of average commercial difficulty at speeds up to 120 w.p.m. and transcribing notes in acceptable mailable form.
Prerequisite: SHM 101 or equivalent, plus grade 12 English or equivalent, and 50 w.p.m. in typewriting.
Course Content — Continuation of SHM 101 above.
(formerly SHM 149c)

PITMAN SHORTHAND — THEORY

SHP 100 **Fee: $55.00, 120 hours, Campus T**
Tuesday and Thursday, 6:00 to 9:00 p.m.

To provide a basis for speed development in writing shorthand.
Prerequisite: Grade 12 English or equivalent.
Course Content — The basic fundamentals of the theory of Pitman shorthand, common short-forms and phrases. Particular emphasis is placed on the development of a high frequency vocabularly common to all dictation.
(formerly SHP 149a)

PITMAN SHORTHAND — ELEMENTARY SPEED LEVEL

SHP 101 **Fee: $45.00, 90 hours Campus T**
Tuesday and Thursday, 6:00 to 9:00 p.m.

This course is offered to those persons desiring to develop facility in writing shorthand at speeds up to 80 w.p.m. or more.
Prerequisite: SHP 100 or SH 900 or equivalent, plus grade 12 English or equivalent, and 45 w.p.m. in typewriting.
Course Content — Development of facility in writing and reading shorthand notes with particular emphasis on the 1,500 common-word vocabulary; practice in transcribing notes at the typewriter.
(formerly SHP 149b)

PITMAN SHORTHAND — INTERMEDIATE SPEED LEVEL

SHP 200 **Fee: $45.00, 90 hours Campus T**
Tuesday and Thursday, 6:00 to 9:00 p.m.

To further develop facility in writing shorthand of average commercial difficulty at speeds up to 120 w.p.m., and in transcribing from notes at the typewriter.
Prerequisite: SHP 101 or equivalent, and 50 w.p.m. in typewriting, plus grade 12 English or equivalent.
Course Content — Development of skill in writing and reading shorthand notes, with emphasis on short-forms and phrases; practice in transcribing notes at the typewriter in acceptable, mailable form.
(formerly SHP 149c)

TYPEWRITING A (Beginning Typewriting)

TYP 152a **Fee: $45.00, 90 hours Campus T**
Monday and Wednesday, 7:00 to 10:00 p.m.

The purpose is to: (a) achieve a mastery of the keyboard using the touch system, plus an introduction to basic typewriting setups; (b) achieve 25 w.p.m. on five-minute tests.
Prerequisite: Basic knowledge of English.
Course Content — All the keys will be taught with special emphasis on the touch system (posture, good stroking, rhythm and correct fingering are an integral part.) The names, care, and proper manipulation of the parts of the machine will be introduced as required. The rules of syllabication and capitalization, an introduction to basic centering, tabulation and letters, plus typing of value for personal use.

TYPEWRITING B (Advanced Typewriting)

TYP 152b **Fee: $45.00, 90 hours Campus T**

Tuesday and Thursday, 7:00 to 10:00 p.m.

The purpose is to: (a) further develop typewriting skills and to concentrate on more advanced typewriting setups; (b) achieve 40 w.p.m. on ten-minute tests.

Prerequisite: 25 w.p.m. or TYP 152a.

Course Content — During this course, emphasis will be placed on practical typing of tabulation-tables, and financial statements; centering of menus, programs, announcements; business letters — different styles, placement, carbon copies and envelopes; essential business forms; erasures and corrections; squeezing and spreading; duplicating — the typing of dittos, stencils, and offset masters; skill development to bring the typist up to 40 w.p.m. or better on ten-minute tests.

BASIC TYPEWRITING — LUMISONIC

TYPE 900 **Fee: $26.00, 40 hours, Campus T**

One hour per night — five nights per week — eight weeks

Inquiries about time should be made at the registrar's office, 51 Terraulay Street. Phone: 362-3971, Ext. 233

An intensive course in keyboard typewriting, taught using the lumisonic system; designed to develop quickly a high keyboard typing speed.

Course Content — The first six hours will be spent learning the keyboard with emphasis on posture, good stroking, rhythm and correct fingering. Later lessons will develop speed and accuracy to a high degree using modern, programmed instructional techniques.

TYPING & OFFICE PRACTICE

TYP 901

6:00 to 7:30 p.m. — five nights a week — ten weeks

Campus T

Inquiries about cost should be made at the registrar's office, 51 Terraulay Street. Phone: 362-3971, Ext. 233

This course is open to those students who have either successfully completed channel six in room B of the lumisonic course or to those who have a net speed of at least 25 w.p.m.

Prerequisite: 25 w.p.m. in typewriting.

Course Content — 30 hours of speed development; 25 hours of instruction in setting up material most common to all offices — letters with carbons, envelopes, tabulation and business forms; 20 hours of instruction in general office practice, giving the student a working knowledge of banking services, mail handling, mail classifications and duplicating processes. The office practice part will be given in the form of lectures and students are expected to take notes. Speed objective is 40 w.p.m.

Electrical/Electronics Courses

ELECTRICAL CONSTRUCTION

EL 10 Electrical Construction Part I
EL 20 Electrical Construction Part II
EL 30 Electrical Construction Part III

APPRENTICE

EL 900 Electrical Apprentice Review

ESTIMATING

EL 901 Estimtating for the Electrical Trade

REGULATIONS

EL 902 Hydro Electric Power Commission Regulations

DRAFTING

EL 903 Electrical Drafting A.T.E.C. Program (Approved)

ELECTRICAL FUNDAMENTALS

EL 904 Lighting Fundamentals
EL 905 Electrical Fundamentals — A.T.E.C. Program (Approved)
EL 906 Alternating Current Circuits — A.T.E.C. Program (Approved)

ELECTRONIC CONTROLS

EL 40A Industrial Electronic Controls Part I
EL 40B Industrial Electronic Controls Part II
EL 40C Industrial Electronic Controls Part III

ELECTRONIC FUNDAMENTALS

ELTC 900 Electronic Fundamentals Part I
ELTC 901 Electronic Fundamentals Part II
ELTC 902 Electronic Fundamentals Part III
ELTC 903 Electronic Fundamentals Part IV (Television)
ELTC 904 Electronic Fundamentals (Transistors — Basic & Advanced) — A.T.E.C. Program (Approved)

COMPUTER PRINCIPLES

ELTC 906 Digital Computer Principles

TELEVISION

ELTC 909 Colour Television
ELTC 911 Advanced Television Service Techniques
ELTC 912 Video Tape Records Theory and Maintenance
ELTC 913 Cable Television Practice (Basic)
ELTC 915 Introductory ETV and Broadcast Maintenance
ELTC 917 Electronic Instruments
ELTC 919 C.C.T.V. and Cable T.V. Origination Course

ELECTRICAL/ELECTRONIC TECHNOLOGY

ELECTRICAL CONSTRUCTION — Part I

EL 10 **Fee: $30.00, 60 hours, Campus CL**

Monday and Wednesday, 7:00 to 10:00 p.m.

Prerequisite: Grade 10 or the equivalent.

Course Content — Ohm's Law, series circuits, combination circuits, two-wire distribution, line loss, power efficiency, wire calculations, batteries, magnetism, electro-magnetism, induction, three-wire distribution, Hydro Electric Power Commission Regulations, shop projects.

ELECTRICAL CONSTRUCTION — Part II

EL 20 **Fee: $30.00, 60 hours, Campus CL**

Tuesday and Thursday, 7:00 to 10:00 p.m.

Prerequisite: EL 10 or the equivalent.
Course Content — electro-magnetism, induction, DC generators, generator set-up and operation, DC motor, motor operation and controls, Hydro Electric Power Commission Regulations, shop projects.

ELECTRIC CONSTRUCTION — Part III

EL 30 **Fee: $30.00, 60 hours, Campus CL**

Tuesday and Thursday, 7:00 to 10:00 p.m.

Prerequite: EL 20 or the equivalent.
Course Content — A.C. fundamentals, vectors, single phase transformers, three-phase motors, three-phase transformers, auto transformers, Hydro Electric Power Commission Regulations, shop projects.

ELECTRICAL APPRENTICE REVIEW

EL 900 **Fee: $30.00, 60 hours, Campus CL**

Monday and Wednesday, 7:00 to 10:00 p.m.

This is a special course for those apprentices who are in their final term and who expect to write the qualifying examination sometime within the year. The course will endeavour to cover theory, code and equipment over the entire area of apprentice training.

ESTIMATING FOR THE ELECTRICAL TRADE

EL 901 **Fee: $30.00, 60 hours, Campus CL**

Monday and Wednesday, 7:00 to 10:00 p.m.

Prerequisite: Journeyman electrician or equivalent.
Course Content — plan analysis, take-off procedure, transferring and pricing, labor units, installation only projects, adjustments for working conditions, cable poles, pull boxes, labor cost variables, non-productive labor, incidental and direct job cost, electric heating loads.

HYDRO ELECTRIC POWER COMMISSION REGULATIONS

EL 902 **Fee: $30.00, 60 hours, Campus CL**

Tuesday and Thursday, 7:00 to 10:00 p.m.

Prerequisite: Applicants must be at least fourth year apprentices.
Course Content — authority, interpretations, use of the index, application of regulations.

ELECTRICAL DRAFTING (Basic) — A.T.E.C. Program (Approved)

EL 903 **Fee: $30.00, 60 hours, Campus CL**

Tuesday, 7:00 to 10:00 p.m.

Course Content — Lettering, use of instruments, linework, orthographic projection, dimensioning, sections, architect scale, isometric projection, sketching, electrical and electronic symbols, basic electrical circuit diagrams, transformers, relays, riser and block diagrams, residential wiring, illumination and electric heating.

LIGHTING FUNDAMENTALS

EL 904 **Fee: $30.00, 60 hours, Campus T**

Wednesday, 7:00 to 10:00 p.m.

Course Content — The course to begin with nature of light, the eye and the relationship between light and sight, lighting terms, laws and controls as well as light measurement and meters. A discussion of light sources, its production and characteristics, including incandescent, gaseous discharge and fluorescent lamps. Luminaire data to consist of general, photometric, electrical and mechanical characteristics. Illumination design including zonal-cavity calculations for industrial buildings, offices and schools, store lighting, exterior residential lighting. Cost analysis to include lamp economics, lighting system ownershp and operating costs.

ELECTRICAL FUNDAMENTALS — A.T.E.C. Program (Approved)

EL 905 **Fee: $30.00, 60 hours, Campus T**

Monday, 7:00 to 10:00 p.m.

Prerequisite: Math 100.
Course Content — basic electrical concepts, simple D.C. circuits, power, magnetism, electro-magnetism, magnetic circuits, D.C. measuring instruments, A.C. measuring instruments, electrical measurements, induction, capacity, alternating current, resistance, impedance, power in A.C. circuits.

ALTERNATING CURRENT CIRCUITS — A.T.E.C. Program (Approved)

EL 906 **Fee: $30.00, 60 hours, Campus T**

Saturday, 9:00 a.m. to 12:00 noon

Prerequisite: EL 905 and Math 200.
Inductance, capacitance, alternating current fundamentals; R, L, and C in A.C. circuits; series A.C. circuits; parallel A.C. circuits; series resonance, parallel resonance, vector loci analysis, network theorems, coupled circuits and transformers, polyphase circuits, non-sinusoidal waves.

INDUSTRIAL ELECTRONIC CONTROLS — Part I

EL 40A **Fee: $30.00, 60 hours, Campus CL**

Thursday, 7:00 to 10:00 p.m.

Prerequisite: Applicants must be fourth year apprentices, journeymen electricians or maintenance electricians.
Course Content — review of basic principles, study of AC theory, vector analysis, introduction to electronics, types of electronic tubes, amplifiers, tube circuitry, and applications, phanotrons, thyratrons, and shopwork.
Instruction will consist of 40% theory and 60% shopwork.

INDUSTRIAL ELECTRONIC CONTROLS — Part II

EL 40B **Fee: $30.00, 60 hours, Campus CL**

Monday, 7:00 to 10:00 p.m.

Prerequisite: EL 40A
Course Content — power supplies, principle of timers, welding timers, current control with gas tubes, thyratron contactors, ignitron contactors, phase shifting, welder heat control, resistance welders, sequence weld timers, synchronous weld timers, shopwork.

INDUSTRIAL ELECTRONIC CONTROLS — Part III

EL 40C **Fee: $30.00, 60 hours, Campus CL**
Thursday, 7:00 to 10:00 p.m.

Prerequisite: EL 40B.
Course Content — photoelectric relays, heat controls, light dimming controls, principle of speed and voltage regulators, speed regulators for small DC motors, voltage control for DC and AC generators, single phase and poly-phase power rectifiers, oscillators, inverters, induction heaters, dielectric heaters, high speed light relays, register control, servomechanisms, shopwork.

ELECTRONIC FUNDAMENTALS — Part I

ELTC 900 **Fee: $30.00, 60 hours, Campus T**
Monday, 7:00 to 10:00 p.m.

Course Content — DC theory, electron theory, current flow, magnetism, electromagnetism, motor action, transformers, capacitors, AC theory, resonance, impedance, bandwidth, tubes, diodes, triodes, pentodes. Lab — suitable series of laboratory experiments correlated to theory.

ELECTRONIC FUNDAMENTALS — Part II (Radio)

ELTC 901 **Fee: $30.00, 60 hours, Campus T**
Tuesday, 7:00 to 10:00 p.m.

Prerequisite: successful completion of ELTC 900.
Course Content — power supplies, audio frequency output stages, detection, intermediate frequency amplifiers, oscillators, converters, RF amplifiers, superheterodyne receivers.
Lab — suitable series of lab experiments correlated to theory and also to construction and test measurements on superheterodyne receivers.

ELECTRONIC FUNDAMENTALS — Part III (Television)

ELTC 902 **Fee: $30.00, 60 hours, Campus T**
Thursday, 7:00 to 10:00 p.m.

Prerequisite: successful completion of ELTC 901.
Course Content — principle of TV transmission and reception, scanning, cathode ray tube, deflection circuits, multivibrator, blocking oscillator, deflection coils and transformers, damper circuit, high voltage circuits, synchronization circuits.
Lab — suitable series of lab experiments correlated to theory.

ELECTRONIC FUNDAMENTALS — Part IV (Television)

ELTC 903 **Fee: $30.00, 60 hours, Campus T**
Thursday, 7:00 to 10:00 p.m.

Prerequisite: successful completion of ELTC 902.
Course Content — video amplifiers, picture intermediate frequency amplifiers, alignment of TV intermediate frequency amplifiers, A.G.C. circuits, sound intermediate frequency amplifiers, power supplies, tuners, dynamic test points in TV receivers, trouble shooting.
Lab — suitable series of lab experiments correlated to theory.

ELECTRONIC FUNDAMENTALS (Transistors — Basic and Advanced)
A.T.E.C. Program (Approved)

ELTC 904 **Fee: $30.00, 60 hours, Campus T**
Wednesday, 7:00 to 10:00 p.m.

Prerequisite: thorough knowledge of electronic fundamentals and radio receiver circuitry.
Course Content — introduction to modern electron theory, semi-conductor physics, junction transistors, transistor characteristics, transistor amplifiers, transistor oscillators, transistor radio receivers, transistors in television, receivers, transistors in electronic circuits, transistor developments, servicing transistor circuits. Laboratory work will form part of the course.

DIGITAL COMPUTER PRINCIPLES

ELTC 906 **Fee: $30.00, 60 hours, Campus T**
Thursday, 7:00 to 10:00 p.m.

Prerequisite: ELTC 904 or equivalent and background knowledge of transistor theory.
Course Content — computer number systems and codes, diode and transistor logic circuits, transistor switching circuits, register circuits, Boolean algebra, arthimetic units, memory systems, input and output devices, the central processing unit.
Lab — logic circuits, transistor flip-flops, counters, shift registers, Boolean logic circuits, the Philco trainer.

COLOUR TELEVISION

ELTC 909 **Fee: $30.00, 60 hours, Campus T**
Thursday, 7:00 to 10:00 p.m.

Prerequisite: sound knowledge of black and white television circuitry. There will be a short qualifying test at the time of registration.
Course Content — principles of the colour TV system, colour receiver circuits: RF and IF circuits, video, sync, voltage supply circuits, band pass amplifier, colour sync, colour killer circuits, colour demodulation, matrix section, colour picture tube and associated circuits; servicing the colour receiver, set up procedure, aligning the colour receiver, trouble shooting. Current models of receivers will be discussed and demonstrated.

ADVANCED TELEVISION SERVICE TECHNIQUES

ELTC 911 **Fee: $30.00, 60 hours, Campus T**
Tuesday, 7:00 to 10:00 p.m.

Prerequisites: Since technicians who successfully complete this course will be accredited by the Electronic Industries Association, applicants must be engaged full time in television servicing. Accordingly, there will be a short qualifying test at registration.
Course Content — This course deals with modern TV fault-finding techniques based on increased knowledge of circuit operation and proper use of test equipment.

VIDEO TAPE RECORDERS THEORY AND MAINTENANCE

ELTC 912 **Fee: $30.00, 60 hours, Campus T**

Tuesday, 7:00 to 10:00 p.m.

Prerequisite: fundamental knowledge of electronics.

Course Content — An introduction to the theory of video tape recording (VTR) principles, the magnetic recording process, tape magnetization, single track, multitrack, vertical and slanted tracks (helical scans), signal modulation and demodulation systems, pre-emphasis and de-emphasis requirements, FM signal differentiation, low pass filter, white clipper, limiter, d-c restoration, servo-operation, basic editing and color signal recording principles.

Demonstration of specific recorders by company representatives of major one-half and one inch VTR manufacturers.

CABLE TELEVISION PRACTICE (Basic)

ELTC 913 **Fee: $30.00, 60 hours, Campus T**

Monday and Wednesday, 7:00 to 10:00 p.m.

Prerequisite: Basic Cable Television Practice or recommendation of employer.

Course Content —

1. Introduction to television. Conversion of light to an electronic signal. Use of the sync signal and derivation of composite waveform. Comparison of black and white and colour. Modulation of the RF carrier. Channel allocations. Propagation and antennas. Elements of the receiver and reproduction.
2. Introduction to cable distribution. The basics of antenna site location, system layout, amplifiers, splitters, tap-off devices, subscriber's drops.
3. Co-axial cable characteristics, attenuation, impedance, loop resistance, requirements for impedance matching.
4. Decibels, VSWR, return loss, and reflections.
5. Amplifiers, general description, tube type, transistorized, wideband, single-channel, main line, distribution and extender. Power feed arrangements for transistorized amplifiers.
6. Line construction techniques — clearances, safety procedures, cable handling, connector splices, etc.
7. Tap-offs, subscriber's drop and apartment house wiring.
8. Installation of amplifier housings, amplifiers and passive devices.
9. Service calls and customer relations.
10. Introduction to fault-finding, using field strength meter and test TV set.
11. Fault diagnosis — adjacent channel and co-channel interference, cross-modulation, ghosts and noise.
12. Transistorized equipment and cable powering — basic do's and don'ts.

INTRODUCTORY ETV AND BROADCAST MAINTENANCE

ELTC 915 **Fee: $30.00, 60 hours, Campus T**

Monday, 7:00 to 10:00 p.m.

Prerequisite: fundamental knowledge of electronics.

Course Content — Theory and techniques as applicable to closed television circuit (CTVC) operations found in broadcast studies, educational television (ETV), community cable television (CCTV) centers, and related fields. VU-meters, audio distribution system and amplifier testing, equalization, turntables, (T.T.), magnetic recording and playback systems and equipment

evaluation, audio consoles, intercommunication (I.C.) and public address (P.A.) requirements.

Video distribution systems and amplifiers, monochrome and color signal (NTSC) evaluation, video monitors, synchronization methods, switchers and effects generators, studio and telecine cameras, camera tubes, 16 mm telecine film projectors, basic test equipment and system evaluation, measurement techniques.

A field trip to a major T.V. broadcast center will be scheduled toward the end of the course.

ELECTRONIC INSTRUMENTS

ELTC 917 **Fee: $30.00, 60 hours, Campus T**

Monday and Wednesday, 7:00 to 10:00 p.m.

Definitions, methods, fundamental units, derived units, D.C. indicators, A.C. indicators, potentiometers, A.C. and D.C. bridges, high input — Z devices, R.F. measurements, audio measurements, transducers and sensors, wave form generation, oscilloscopes, testers.

C.C.T.V AND CABLE T.V. ORIGINATION COURSE

ELTC 919 **Fee: $30.00, 60 hours, Campus T**

Wednesday, 7:00 to 10:00 p.m.

Television waveform, video monitors, waveform monitors, vectorscope; camera tubes, I.O., vidicon, plumbicon, flying spot origination; camera electronic systems, function of controls; practical work on vidicon monochrome camera; lenses and optical systems, telecine multiplexers, film gamma, slides; audio I; and audio II; 1″ V.T.R.; switchers and special effects; lighting and studio planning; review and examination.

Engineering Technology Courses

INSTRUMENTATION

INST 100	Measuring Principles A.T.E.C. Program (Approved)
INST 900	Basic Instrumentation Electronics
INST 130/131	Instrumentation
INST 101	Electronic Instrumentation
INST 200	Automatic Control Principles I (available 1973/74)
INST 203	Computer Control Principles I A.T.E.C. Program (Approved)
INST 300	Automatic Control Principles II (available 1973/74)
INST 301	Computer Control Principles II (available 1973/74)

WELDING

WELD 900	Welding I
WELD 901	Welding II
WELD 902	Welding Pre-Certification "A" (C.W.B.)
WELD 903	Welding Pre-Certification "B"
WELD 904	Pipe Welding "A" Uphill Arc Welding
WELD 905	Pipe Welding "B" Downhill Arc Welding
WELD 906	Pipe Welding "C" T.I.G. Welding (Heliarc)
WELD 907	Pipe Welding "D"
WELD 908	Welding Maintenance
WELD 909	Metalwork — ornamental
WELD 910	Inert Gas Welding (Heliarc)
WELD 911	Weld Testing and Inspection

TECHNICAL DRAWING & DRAFTING

DR 100	Technical Drawing I — A.T.E.C. Program (Approved)
DR 903	Technical Drawing II — A.T.E.C. Program (Approved)
DR 902	Process Pipe Drafting
DR 134	Plate and Structural Layout
DR 149	Basic Drawing and Sketching for Hobbyists

BLUEPRINT READING

DR 130	Blueprint Reading for Machine Trades
DR 14/24	Blueprint Reading for Millwrights (Part I)
DR 24/34	Blueprint Reading for Millwrights (Part II)
DR 147	Blueprint Reading for Welding Trade
DR 902	Process Pipe Drafting — A.T.E.C. Program (Approved)
DR 907	History of Engineering Ideas

MATERIALS HANDLING

DR 906	Materials Handling and Plane Layout Design Part I

TOOL DESIGN

TD 100	Jig and Fixture Design I — A.T.E.C. Program (Approved)
TD 101	Jig and Fixture Design II — A.T.E.C. Program (Approved)
TD 200	Die Design I — A.T.E.C. Program (Approved)
TD 201	Die Design II — A.T.E.C. Program (Approved)
TD 203	Injection Mould Design — A.T.E.C. Program (Approved)
TD 907	Tool Design Theory

PRODUCTION CONTROL

TD 900	Production and Inventory Control I
TD 901	Inventory Control

MACHINE TECHNOLOGY

MACH 110	Workshop Technology
MACH 120	Jig and Fixtures I
MACH 140-a-b & c	Benchwork
MACH 140-a & b	Measurement and Layout
MACH 141-a-b & c	Lathework — Basic, Intermediate & Advanced

MILLING & GRINDING

MACH 142a	Milling
MACH 142b	Milling
MACH 143	Grinding
MACH 204	Diemaking I — A.T.E.C. Program (Approved)
MILL 900.	Mechanical Maintenance
MACH 901	Mouldmaking I

NUMERICAL CONTROL

MACH 902	Numerical Control (Mill Operation) Part I
MACH 903	Numerical Control Part II (Advanced)
MACH 905	Numerical Control Part III
MACH 904	Electrical Discharge Machining — EDM1

PLASTICS

PL 900	Forming and Fabricating of Thermoplastics
PL 901	Introdutcion to Plastics
PL 902	Extrusion
PL 903	Designing with Plastics
PL 904	Compounding and Colouring
PL 905	Injection Moulding
PL 906	Blow Moulding
PL 907	Plastic Film — Production — Testing & Applications
PL 125	Processes and Design

CHEMISTRY

CHEM 100	Chemistry (General)
CHEM 210	Chemistry (Polymer)
CHEM 901	Coatings Technology

ULTRASONIC TESTING

TEST 900	Ultrasonic Testing I
TEST 901	Eddy Current Testing I
TEST 902	Ultrasonic Testing II

RADIOGRAPHY

TEST 903	Industrial Radiography I
TEST 904	Industrial Radiography II

EQUIPMENT SERVICING

BES 900	Business Equipment Servicing Part I
BES 901	Business Equipment Servicing Part II

WATCHMAKING

WATCH 900	Electric Watch Service
WATCH 901	Watchmaking
WATCH 902	Watchmaking (Advanced)
WATCH 903	Basic Clock Repairing
WATCH 904	Practical Watch Adjustment

PROSTHETICS

PROS 900	Above Knee Amputations
PROS 901	Below Knee Amputations

INSTRUMENTATION

The Instrumentation Department will offer a series of part-time courses to enable those employed in the instrumentation field to upgrade their knowledge. Part-time courses may be used as credits towards the certificate which is obtained through full-time study. To enable students to plan their studies, the following courses will be offered during the 1972/73 and 1973/74 sessions. The asterisk (*) indicates the year that the course will be given.

		1972/73	1973/74
INST 100	Measuring Principles	*	
INST 130/131	Instrumentation	*	
INST 900	Basic Instrumentation Electronics	*	
INST 101	Electronic Instrumentation	*	
INST 200	Automatic Control Principles I		*
INST 203	Computer Control Principles I	*	
INST 300	Automatic Control Principles II	*	*
INST 301	Computer Control Principles II		*

MEASURING PRINCIPLES — A.T.E.C. Program (Approved)

INST 100 **Fee: $30.00, 60 hours, Campus K**

Thursday, 7:00 to 10:00 p.m.

Course Content — C.G.S., M.K.S., F.P.S., systems of units, dimensional analysis; theory and construction of devices, mechanical — pneumatic methods for the measurement of pressure, vacuum, temperature, flow, viscosity, specific gravity, and level.

INSTRUMENTATION

INST 130/131 **Fee: $30.00, 60 hours, Campus K**

Wednesday, 7:00 to 10:00 p.m.

Prerequisite: Applicant should be employed in instrumentation or an associated field.
Course Content — Applied physics, pneumatic and electronic instruments, control theory and systems applications, final control elements including valve sizing, analysis equipment including speed, pH, humidity chromatography.

COMPUTER CONTROL PRINCIPLES I

INST 203 **Fee: $30.00, 60 hours, Campus K**

Monday, 7:00 to 10:00 p.m.

Prerequisite: Mathematics and electronic background.
Course Content — Introduction to binary concept, principles of digital logic, Boolean algebra, the rules for logical manipulation, digital subsystems, digital systems.

AUTOMATIC CONTROL PRINCIPLES II

INST 300 **Fee: $30.00, 60 hours, Campus K**

Thursday, 7:00 to 10:00 p.m.

Prerequisite: Automatic Control Principles I — INST 200.

Course Content — Control considerations; exponential lag, step response and frequency response; dead time lag, step and frequency response. Process combinations, frequency response and step response; controller forms; process and controller combination. Elementary system stability, the closed loop, disturbances in the closed loop, control system design.

BASIC INSTRUMENTATION ELECTRONICS

INST 900 **Fee: $30.00, 60 hours, Campus K**

Tuesday, 7:00 to 10:00 p.m.

This course is designed primarily for pneumatic instrumentation personnel who wish to study the basic fundamentals of electronic instrumentation. The course consists of lectures, experiments and practical applications.
Course Content — Ohm's Law, series and parallel circuits, test instruments, basic electron tube and transistor theory, thermocouples, potentiometric devices, wheatstone bridge, radiation and optical pyrometry, calibration and trouble-shooting techniques.

ELECTRONIC INSTRUMENTATION

INST 101 **Fee: $30.00, 60 hours, Campus K**

Tuesday, 7:00 to 10:00 p.m.

Prerequisite: A.C. & D.C. fundamentals.
Course Content — Application and calibration of electronic sensing and transmitting devices, transmission systems, converters, recorders, and controllers.

WELDING

WELDING I

WELD 900 **Fee: $30.00, 60 hours, Campus K**

Choice of Tuesday or Thursday, 7:00 to 10:00 p.m.

This is a general course designed to teach the fundamentals of oxyacetylene and electric arc welding.
Prerequisite: Ability to understand English well enough to absorb instruction.
Course Content — Basic principles of oxyacetylene and electric arc welding, safety precautions, types and uses of various oxyacetylene flames ,types and uses of various rods and electrodes, braze welding, use of fluxes, arc welding machine controls, practice welding in the flat position using oxyacetylene and electric arc equipment.

WELDING II

WELD 901 **Fee: $30.00, 60 hours, Campus K**

Wednesday, 7:00 to 10:00 p.m.

This is a general course designed to supplement WELD 900.
Prerequisite: Successful completion of Welding I or equivalent experience.
Course Content — Theory of alternating and direct current, polarity, arc blow. Shielded arc electrodes, classification, selection of electrodes. Edge preparations, joint design, weld faults, manufacture and storage of oxygen and acetylene. Basic welding metallurgy, control of distortion, testing of welds. Practice welding in all positions using oxyacetylene and electric arc equipment.

WELDING PRE-CERTIFICATION "A" (C.W.B.)

WELD 902 **Fee: $60.00, 60 hours, Campus K**
Monday, 7:00 to 10:00 p.m.

This is a course designed to improve the technical skills of candidates who are preparing to take the Canadian Welding Bureau all position metallic arc qualification test.
Prerequisite: Successful completion of WELD 900 and WELD 901 or equivalent experience.
Course Content — Safety precautions, function of electrode coatings, electrode selection and application. Edge preparation, weld faults, welding techniques, setting up equipment. Testing of welds and operators, codes. Practice welding of fillet and butt joints in all positions, using cellulose and low hydrogen electrodes.
NOTE: The College is not authorized to issue qualification cards on behalf of the Canadian Welding Bureau. A certificate from The George Brown College will be issued upon successful completion of this program.

WELDING PRE-CERTIFICATION "B"

WELD 903 **Fee: $60.00, 60 hours, Campus K**
Thursday, 7:00 to 10:00 p.m.

This is a course designed to improve the technical skills of candidates who are preparing to take the Department of Labour all position metallic arc qualification test.
Prerequisite — Successful completion of WELD 900 and WELD 901 or equivalent experience.
Course Content — Safety precautions, function of electrode coatings, electrode selection and application. Edge preparation, weld faults, welding techniques, setting up of equipment. Testing of welds and operators, codes. Practice welding of butt joints in all positions, using cellulose and low hydrogen electrodes. Root and face guided bond test specimens will be taken from butt welds in all positions.
NOTE: Arrangements can be made to have the final practical test inspected by the Department of Labour who will issue the appropriate certification if the test conforms to code requirements. A slight additional fee is involved. In addition, The George Brown College certification will be issued to all successful candidates.

PIPE WELDING "A" — UPHILL ARC WELDING

WELD 904 **Fee: $60.00, 60 hours, Campus K**
Wednesday, 7:00 to 10:00 p.m.

This is a course designed to teach the fundamentals of the uphill method of pipe welding, using arc welding equipment and low hydrogen arc welding electrodes.
Prerequisite: (1) Successful completion of WELD 900, WELD 901, and WELD 902 or WELD 903 or (2) Department of Labour or Canadian Welding Bureau certification for all positions.
Course Content — Pipe specifications, preparation of pipe, recommended fits and tolerances. Electrode selection and classification. Testing of welds and operators, codes. Practice welding, using the uphill welding technique and low hydrogen arc welding electrodes.

NOTE: Arrangements can be made to have the final practical test inspected by the Department of Labour who will issue the appropriate certification if the test conforms to code requirements. A slight additional fee is involved. In addition, The George Brown College certification will be issued to all successful candidates.

PIPE WELDING "B" — DOWNHILL ARC WELDING

WELD 905 **Fee: $60.00, 60 hours, Campus K**
Monday, 7:00 to 10:00 p.m.

This course is designed to teach the fundamentals of the downhill method of pipe welding, using arc welding equipment and cellulose arc welding electrodes.
Prerequisite: (1) Successful completion of WELD 900, WELD 901 and WELD 902 or WELD 903 or (2) Department of Labour or Canadian Welding Bureau certification for all positions.
Course Content — Pipe specifications, preparation of pipe, recommended fits and tolerances. Electrode selection and classification. Testing of welds and operators, codes. Practice welding using the downhill welding technique and cellulose arc welding electrodes.

PIPE WELDING "C" — T.I.G. WELDING (Heliarc)

WELD 906 **Fee: $60.00, 60 hours, Campus K**
Wednesday, 7:00 to 10:00 p.m.

This is a course designed to teach the fundamentals of the uphill method of pipe welding, using the T.I.G. process for the root pass and low hydrogen electrodes on succeeding passes.
Prerequisite: (1) Successful completion of WELD 900, WELD 901 and WELD 903 or (2) Possession of Department of Labour or Canadian Welding Bureau certificate for all positions and proficiency in use of low hydrogen electrodes.
Course Content — Pipe specifications, preparation of pipe, recommended fits and tolerances. Electrode classification and selection. Testing of welds and operators, codes. Setting up and adjusting T.I.G. equipment. Tungsten electrodes, shielding gases. Practice welding, using the T.I.G. process for the root pass and low hydrogen electrodes for succeeding passes.
NOTE: Arrangements can be made to have the final practical test inspected by the Department of Labour who will issue the appropriate certification if the test conforms to code requirements. A slight additional fee is involved. In addition, The George Brown College certification will be issued to all successful candidates.

PIPE WELDING "D"

WELD 907 **Fee: $60.00, 60 hours, Campus K**
Monday, 7:00 to 10:00 p.m.

This is a course designed to teach the fundamentals of pipe welding, using the oxyacetylene process.
Prerequisite: (1) Successful completion of WELD 900 and WELD 901 or (2) a minimum of six months continuous oxyacetylene welding experience.
Course Content — Pipe specifications, pipe fittings, preparation of pipe. Types and sizes of welding rods, flame adjustments, safety precautions. Layout of pipe and templates. Testing of welds and operators, codes. Practice welding

of 2″, 4″ and 6″ diameter pipe in all positions, manual oxyacetylene cutting. NOTE: Arrangements can be made to have the final practical test inspected by the Department of Labour who will issue the appropriate certification if the test conforms to code requirements. A slight additional fee is involved. In addition, The George Brown College certification will be issued to all successful candidates.

WELDING — MAINTENANCE

WELD 908 **Fee: $30.00, 60 hours, Campus K**
Tuesday, 7:00 to 10:00 p.m.

This is a course designed to teach the fundamentals of oxyacetylene and electric arc welding and is specially designed to meet the needs of maintenance personnel.
Prerequisite: A basic knowledge of welding would be an asset.
Course Content — Maintenance of oxyacetylene and electric arc auxiliary equipment, safety precautions. Techniques involved in the joining of a variety of metals, preheat and post-heat procedures. Demonstrations and practice in the joining of cast iron, stainless steel, and aluminum, silver brazing, hard facing and building up, oxyacetylene and arc cutting, welding of tubing and pipe to plate, positional welding.

METALWORK — ORNAMENTAL

WELD 909 **Fee: $30.00, 60 hours, Campus K**
Tuesday, 7:00 to 10:00 p.m.

This is a course designed for the hobbyist, and provides a general knowledge of the machines, tools, and materials essential to the art of ornamental metal work.
Course Content — Fundamentals of welding, safety precautions, selection of materials, fundamentals of design. Use of hand tools, methods of twisting, forming and fastening metals, forming of scrolls. Surface decoration, surface finishing, use of metal working equipment. Practical shop work consisting of the fabrication of various types of ornamental metal projects.

INERT GAS WELDING (Heliarc)

WELD 910 **Fee: $60.00, 60 hours, Campus K**
Monday, 7:00 to 10:00 p.m.

This is a course designed to teach the fundamentals of manual tungsten inert gas (T.I.G.) welding and semi-automatic metal inert gas (M.I.G.) welding to persons who are qualified oxyacetylene or electric arc welders.
Prerequisite: Successful completion of WELD 900 and WELD 901 or a minimum of six months continuous experience in oxyacetylene or arc welding.
Course Content — Setting up and adjusting T.I.G. and M.I.G. equipment. Types, sizes and uses of tungsten electrodes, types and sizes of filler and aluminum, using T.I.G. and M.I.G. equipment.

WELD TESTING AND INSPECTION

WELD 911 **Fee: $30.00, 60 hours, Campus K**
Thursday, 7:00 to 10:00 p.m.

This course is designed to teach the basic fundamentals of weld testing and inspection, and consists of lectures, demonstrations, and laboratory work.

Candidates may supplement this course with Blueprint Reading for the Welding Trade.
Prerequisite: Candidates should have a general knowledge of welding.
Course Content — Inspection duties, welding terms and processes. Qualification tests for welders. Demonstrations of incorrect welding techniques, using various welding processes to illustrate the development of weld faults, heat-treatment. Preparation and testing of weld specimens, using the following standard destructive and non-destructive methods: visual, tensile, hardness, fracture, bend, ultrasonic, magnetic particle, microscopic, fluorescent penetrant and dye penetrant. Interpretation of radiographs.

TECHNICAL DRAWING I — A.T.E.C. Program (Approved)

DR 100 **Fee: $30.00, 60 hours, Campus CL**
Thursday, 7:00 to 10:00 p.m.

An introduction to drawing office practice, including instruction in the use of instruments, lettering, linework, applied geometry, third angle orthographic projection, oblique and isometric drawings, freehand sketching, conventions and symbols, sections, tolerances, limits and fits, surface roughness, gears, cams, pipe fittings & layouts, electrical drawings & symbols and detail, layout and assembly drawings.

TECHNICAL DRAWING II — A.T.E.C. Program (Approved)

DR 903 **Fee: $30.00, 60 hours, Campus CL**
Tuesday, 7:00 to 10:00 p.m.

This course is a continuation of Technical Drawing I. The topics included are treated in greater depth.
Prerequisite: DR 100 or equivalent.
Course Content — Bearing types, lubrication, selection. Gear types, definitions, formulae, gear trains, application & drawings. Cam types, followers, motions, layouts, displacement diagrams, drawings. Selection of fasteners, fittings, springs and other standard components. Limits and fits, unilateral and bilateral tolerances, classes of fits, geometric tolerances, standard notes & symbols. Surface roughness, engineering materials and production methods. Jigs, fixtures & gauges, practical drawing applications. Details, design layouts, assemblies and subassemblies.

BLUEPRINT READING FOR MACHINE TRADES

DR 130 **Fee: $30.00, 60 hours, Campus CL**
Thursday, 7:00 to 10:00 p.m.

The aim of this course is to provide tradesmen with a basic understanding of blueprint reading.
Course Content — Freehand sketching: freehand sketching of simple and complex objects using multiview, isometric and oblique projections. Blueprint reading: study of methods of representation of objects, including orthographic notes and specifications, surface finish. Auxiliary views, section. Threads and fasteners. Gears and cams, simple developments. Details assembly drawings. Methods of reproduction of drawings.

BLUEPRINT READING FOR MILLWRIGHTS — Part I

DR 14/24 **Fee: $30.00, 60 hours, Campus CL**

Tuesday, 7:00 to 10:00 p.m.

The purpose of this course is to provide tradesmen with a basic understanding of blueprint reading.

Course Content — Basic drafting principles; instruments, line work, pencil drawing techniques. The three-view drawing system. Principal views and single auxiliary views. Main types of commonly used sectional views. Freehand engineering sketching of parts. Basic dimensioning principles and the theory of manufacturing tolerances. Surface finishes; symbols used, surface gauge plates, applications to products. Screw threads; specifications, basic forms, how to show on drawings. The study of blueprints typical of the trade.

BLUEPRINT READING FOR MILLWRIGHTS — Part II

DR 24/34 **Fee: $30.00, 60 hours, Campus CL**

Thursday, 7:00 to 10:00 p.m.

This course is a continuation of DR 14/24.

Prerequisite: Part I — DR 14/24.

The course is intended for tradesmen who wish to obtain a greater knowledge of trade blueprint reading.

Course Content — Advanced studies of blueprints, auxiliary views, sectional views, dimensioning systems, classes of machine fits and tolerances; manufacturing processes including casting, forging, moulds, machining, and material specifications; fastening devices, both permanent and removable and their specifications; welding symbols commonly used as per Canadian Welding Society Standards; structural steel symbols, dimensioning techniques and standard shapes; structural layouts using symbols and bill of material, piping drawings, symbols, piping code, line diagrams in single line and isometric, standard hardware used in piping installations, theory of drives, spur & bevel gearing, couplings, "V" belts, hydraulics, use of industrial catalogues, the study of shop and field installation drawings.

PLATE AND STRUCTURAL LAYOUT

DR 134 **Fee: $30.00, 60 hours, Campus CL**

Wednesday, 7:00 to 10:00 p.m.

Course Content — Plane geometrical constructions and terminology, orthographic projection, principal and auxiliary views, dimensioning systems, basic principles of descriptive geometry. true length of lines, true shape of planes, true angles, revolutions and intersection of planes, developments by parallal lines, radial line and triangulation methods, structural shapes, symbols and specifications, layout and development of industrial projects involving plate and structural shapes, fabricating methods, shop notes and bills of material.

BLUEPRINT READING FOR THE WELDING TRADE

DR 147 **Fee: $30.00, 60 hours, Campus CL**

Monday, 7:00 to 10:00 p.m.

Course Content — Orthographic three-view projection, line work, notes, dimensioning principles, working drawings, drawing to scale, auxiliary views, technical freehand sketching, a study of welded detail, assembly drawings, industrial blueprints, shop notes, small tool operations, fabrication specifications, welding symbols as speciifed by the Canadian Welding Society, structural shapes and symbols, plate specifications, bills of material, conventional practices, sectional views, blueprint reading methods.

PROCESS PIPE DRAFTING — A.T.E.C. Program (Approved)

DR 902 **Fee: $30.00, 60 hours, Campus CL**

Wednesday, 7:00 to 10:00 p.m.

For people who wish to become familiar with the techniques of process pipe drafting.

Prerequisite: Basic knowledge of mechanical drafting.

Course Content — Pipe drawing using single and double line symbols, orthographic, oblique, isometric and developed methods of representation, pipes, values, standard sizes, materials, and methods of fabrication, schematic and flow diagrams, simplified piping layout.

MATERIALS HANDLING AND PLANT LAYOUT DESIGN — Part I

DR 906 **Fee: $30.00, 60 hours, Campus CL**

Wednesday, 7:00 to 10:00 p.m.

The aim of the course is to provide the student with a basic knowledge of modern packaging and handling techniques in relationship to efficient plant layout.

Prerequisite: basic knowledge of mechanical drafting.

Course Content — history of materials handling, principles of good materials handling, flow charts and diagrams, plant layout, horizontal and vertical movement of materials, modern packaging techniques, case histories of materials handling layout, safety aspect and reliability of equipment, selection of equipment, maintenance of equipment, use of engineering catalogues.

TOOL DESIGN PART-TIME COURSES

A part-time student may study individual courses or he may complete a prescribed program of courses as credits toward a diploma as a Tool Design Technician. Details of the program are shown in the 1972/73 day calendar and in the Tool Design Technician brochure. Some credits may be granted to mature students on the basis of previous education or experience. Inquiries should be made at the registrar's office, 37 Dartnell Avenue. Phone: 362-3971, Ext. 188 or 190.

Prerequisite: Grade XII, preferably with machine shop or drafting option or equivalent industrial experience unless otherwise noted. Students without prevous drafting experience should register for Technical Drawing I, DR 100.

JIG AND FIXTURE DESIGN I — A.T.E.C. Program (Approved)

TD 100 **Fee: $45.00, 90 hours, Campus CL**

Wednesday, 7:00 to 10:00 p.m.

Course Content — Freehand sketching and machine drafting of basic jig and fixture designs, emphasizing current production methods and organization.

JIG AND FIXTURE DESIGN II — A.T.E.C. Program (Approved)

TD 101 **Fee: $45.00, 90 hours, Campus CL**
Wednesday, 7:00 to 10:00 p.m.

Prerequisite: TD 100.
Course Content — Freehand sketching and machine drafting of advanced jig and fixture designs, emphasizing current production methods and organization.

DIE DESIGN I — A.T.E.C. Program (Approved)

TD 200 **Fee: $45.00, 90 hours, Campus CL**
Thursday, 7:00 to 10:00 p.m.

Prerequisite: TD 100.
Course Content — Freehand sketching and machine drafting of basic blanking, piercing, cut-off and bending dies.

DIE DESIGN II — A.T.E.C. Program (Approved)

TD 201 **Fee: $45.00, 90 hours, Campus CL**
Thursday, 7:00 to 10:00 p.m.

Prerequisite: TD 200.
Course Content — Freehand sketching and machine drafting of advanced blanking, piercing and bending dies. Introduction to basic draw dies.

INJECTION MOULD DESIGN — A.T.E.C. Program (Approved)

TD 203 **Fee: $45.00, 90 hours, Campus CL**
Monday, 7:00 to 10:00 p.m.

Prerequisite: TD 200.
Course Content — Principles of injection mould design involving freehand sketching and some design.
An advanced Mould Design course may be offered.

TOOL DESIGN THEORY

TD 907 **Fee: $45.00, 90 hours, Campus CL**
Monday, 7:00 to 10:00 p.m.

Involves theory of tool design only. Various areas of manufacturing engineering are covered, e.g., cutting tool design, process planning, turret and auto lathe layouts, economics, location and clamping theory. Practical drafting will be at a minimum.

PRODUCTION CONTROL

Course Content — quotas, forecasts and budgets, long range planning, short range planning, processing the production order, control techniques, cycle time control, case study, reporting and follow-up, data processing.

PRODUCTION AND INVENTORY CONTROL I

TD 900 **Evening and fee to be announced**

Inquiries should be made at the registrar's office, 37 Dartnell Avenue
Phone: 362-3971, Ext. 188 or 190

This course is offered in co-operation with the Canadian Association for

Production and Inventory Control. The objectives of the course are:
(a) to acquaint those who have recently entered this field with the fundamental techniques being applied in this area of management;
(b) to emphasize the practical application of techniques that have proven successful in a number of companies representing the wide cross-section of industry;
(c) to offer an insight into this field for supervisors engaged in areas of management related to production and inventory control.

The lecturers are practitioners or consultants in production and inventory control. Each session will centre around participation by those enrolled in the course. Registration will be limited to encourage discussion among the students and with the instructors at each session. Additional experts will be called upon to assist in the lecturing.

INVENTORY CONTROL

TD 901 **Evening and fee to be announced**

Inquiries should be made at the registrar's office, 37 Dartnell Avenue
Phone: 362-3971, Ext. 188 or 190

Course Content — Principles and functions of inventory control. Identification and classification; stock records cards and their use, control inventory, policy, re-ordering systems, case study exercise, practical applications, data processing and inventory control, summation and test, what management requires of an inventory control system.

WORKSHOP TECHNOLOGY — A.T.E.C. Program (Approved)

MACH 110 **Fee: $30.00, 60 hours, Campus CL**
Thursday, 6:30 to 9:30 p.m.

Prerequisite: Grade XII.
Course Content — Review of basic manufacturing processes, metal cutting, precision measurement and inspection; Centre, capstan and turret lathes, horizontal and vertical mills, surface and cylindrical grinders, jig boring, broaching, die-sinking, centerless grinding, electro-discharge and electro-chemical machining, numerical control.

JIG AND FIXTURES I

MACH 120 **Fee: $45.00, 90 hours, Campus CL**
Monday, 7:00 to 10:00 p.m.

Prerequisite: MACH 140, 141, 142, 143 or equivalent.
Course Content — Layout procedures, fitting, fastener application, part planning, jig and fixture parts, milling, welding, grinding and assembly fixtures, drill jigs.

MEASUREMENT AND LAYOUT

MACH 140A and B **Fee: $30.00, 60 hours, Campus CL**
Monday, 7:00 to 10:00 p.m.

Course Content — Basic types of measuring tools, gauges, indicators, micrometers, verniers, optical testing tools, surface finish, surface plate, scribers, surface gauge, dividers, punches, rules, calipers, angle plates, squares, vernier height gauges, protractors. Indexing; plain and rapid, co-ordinate measurement, Sine bar. Assignments and practical applications.

BENCHWORK

MACH 140C **Fee: $20.00, 30 hours, Campus CL**
Monday, 7:00 to 10:00 p.m.

Course Content — The care and use of hand tools such as hammers, files, chisels and hacksaws. Related machine operations such as drilling, reaming, tapping, counterboring, bandsawing, band filing and band welding.
Prerequisite: MACH 140A and 140B or equivalent.
NOTE: 140A, 140B, and 140C can be taken separately or consecutively. Together they form an introductory course that is a prerequisite for all machine shop courses.

LATHEWORK (Basic)

MACH 141A **Fee: $30.00, 60 hours, Campus CL**
Tuesday, 7:00 to 10:00 p.m.

Prerequisite: MACH 140 or equivalent.
Course Content — Lathe construction, operation, safety and accessories; theory of metal cutting, sharpening tool bits, plain turning, knurling, drilling, counter boring and tapping, form turning; steady and follower rest work.

LATHEWORK (Intermediate)

MACH 141B **Fee: $30.00, 60 hours, Campus CL**
Wednesday, 7:00 to 10:00 p.m.

Prerequisite — MACH 141A or equivalent.
Course Content — Indicating, four jaw chuck work, taper theory and taper turning, profile turning, spring winding, grinding attachments.

LATHEWORK (Advanced)

MACH 141C **Fee: $30.00, 60 hours, Campus CL**
Thursday, 7:00 to 10:00 p.m.

Prerequisite: MACH 141B or equivalent.
Course Content — thread types, theory and cutting, single and multiple start threads, eccentrics, boring, turret lathe theory.

MILLING

MACH 142A **Fee: $30.00, 60 hours, Campus CL**
Tuesday, 7:00 to 10:00 p.m.

Prerequisite: MACH 140 and 141 or equivalent.
This program is designed for people who wish to acquire the basic skills and a knowledge of milling.
Course Content — Milling machine construction and the operation of various types of milling machines, work holding devices, cutters and attachments, speeds, feeds, and safety precautions; flat, angular and form milling, fly cutting, and cutting fluids; basic heat-treatment.

MILLING

MACH 142B **Fee: $30.00, 60 hours, Campus CL**
Thursday, 7:00 to 10:00 p.m.

Prerequisite: MACH 142A or equivalent.
Course Content — Theory and practice in the use of dividing head, with

special attention to differential and angular indexing gear theory, gear cutting, helical milling theory with special emphasis on mathematical problems in helical milling, jig boring, contour tracing, pantograph and slotting.

GRINDING

MACH 143 **Fee: $30.00, 60 hours, Campus CL**
Thursday, 7:00 to 10:00 p.m.

Prerequisite: MACH 140 and 141 or equivalent.
This course is designed for people who wish to acquire the basic skills and a knowledge of precision grinding.
Course Content — Surface grinder: construction and operation, mounting wheels , methods of holding work, principles of magnetic chuck, demagnetizing, grinding work square, use of sine-chuck for grinding accurate angles, safety precautions. Cylindrical grinder: principal parts and operation, internal and external grinding, parallel and taper grinding. Tool and cutter: purpose, theory and practice in sharpening various cutters. Form grinding, grinding wheel theory.

DIEMAKING I — A.T.E.C. Program (Approved)

MACH 204 **Fee: $45.00, 90 hours, Campus CL**
Monday and Wednesday, 7:00 to 10:00 p.m.

Prerequisite: MACH 140, 141, 142, and 143 or equivalent.
Course Content — Punch press theory and operation, press brake theory and operation. Theory, development, construction and operation of the following types of dies: cut-off, trim, pierce, bending, blank, forming, compound.

MECHANICAL MAINTENANCE

MILL 900 **Fee: $30.00, 60 hours, Campus CL**
Monday, 7:00 to 10:00 p.m.

This course is designed for those working as maintenance mechanics who wish to improve their knowledge of mechanical components, their functions, limitations, and service procedures.
Course Content — Belt drives, chain drives, gears, shafts, keys, couplings, bearings, variable speed transmissions, clutches, brakes and seals.

MOULDMAKING I

MACH 901 **Fee: $45.00, 90 hours, Campus CL**
Monday, 7:00 to 10:00 p.m.

Prerequisite: Considerable general machining experience.
Course Content — Safety, mould construction, parts and functions, types of steels used, accuracy, tolerancing, shrink factors, principal thermoplastics and their applications, specialized hand tools and equipment, finish on moulds, machining mould parts, heat treatment, lapping, assembly and tryout.

NUMERICAL CONTROL (Mill Operation) — Part I

MACH 902 **Fee: $20.00, 30 hours, Campus CL**
Thursday, 7:00 to 10:00 p.m.

This course is designed for persons who wish to gain a good basic practical background in the application and operation of numerical control machines.

Prerequisite: General machining experience.
Course Content — Applications, justification, axes, co-ordinates, quadrants, systems, tapes and codes, programming, tape preparation, machine set-up and operation.

NUMERICAL CONTROL — Part II (Advanced)

MACH 903 **Fee: $20.00, 30 hours, Campus CL**
Saturday, 9:00 a.m. to 12:00 noon

Prerequisite: MACH 902.
Course Content — Advanced problems; programming and machine set-ups.

ELECTRICAL DISCHARGE MACHINING — EDMI

MACH 904 **Fee: $20.00, 30 hours, Campus CL**
Saturday, 9:00 a.m. to 12:00 noon

Prerequisite: Thorough knowledge of machine shop practice.
Course Content — "Hands on" training in the operation of resistance — capacitance and pulse type power supply E.D.M. equipment. Theory of discharge process, dielectrics, tool wear and overcut. Theory and practice of electrode manufacture, using lathes, mills, grinders and pantograph.

NUMERICAL CONTROL — Part III

MACH 905 **Fee: $20.00, 30 hours, Campus CL**
Tuesday, 7:00 to 10:00 p.m.

Prerequisite: MACH 904 or previous part programming experience.
Course Content — History; computer assist N/C language, APT and AD-APT systems. Hardware, software, AD-APT system structure. AD-APT; co-ordinate system, part geometry, tools-to-geometry relationships, part surface, drive surface, check surface, extended capabilities. AD-APT statements, vocabulary, symbols and punctuation. Geometric words, logical structure in describing, part geometry. Tool motion, tool description statements, motion statements, motion termination.

HISTORY OF ENGINEERING IDEAS

DR 907 **Fee: $25.00, 20 hours, Campus CL**
Wednesday, 7:00 to 9:00 p.m.

The origins and development of the ideas which contributed to many of our present day machines. Ancient ideas of Archimedes, Da Vinci, Bacon and others and their influence on modern engineering. Origins of threads, gears, link mechanisms, cams and their applications through the years to the inventions of Watt, Stephenson, Bell and others. Future applications for unused ideas of the past.

BASIC DRAWING AND SKETCHING FOR HOBBYISTS

DR 149 **Fee: $25.00, 20 hours, Campus CL**
Monday, 7:00 to 9:00 p.m.

Whether you wish to build a model engine, a pieec of early Canadian furniture, or a custom lampshade, a proper drawing or a design layout or a full size template of the required part will greatly facilitate the making of the part and probably save valuable time and material. Experimentation and modification can be done on the drawing so that the finished drawing will show in detail exactly what the finished product will look like, what procedures are necessary, and what material is required.
The course is aimed at the hobbyist and takes a practical approach to the fundamentals of drafting and sketching and includes: use of instruments, basic geometry, orthographic projection, pictorial drawing and developments. Students may select their own projects.

GENERAL INFORMATION REGARDING PART-TIME COURSES IN PLASTICS

SHIFT WORKERS

Our present policy is to permit those who cannot attend regular classes to attend the College between the hours of 9:00 a.m. to noon, Monday through Thursday, in lieu of attending evening classes. Dates and times must be prearranged.

TECHNICAL AND OPERATOR PROGRAMS

The part-time courses prescribed for these programs are identical with those listed in the day calendar for full-time students. Part-time students can qualify for a certificate or diploma through part-time courses.

THERMOSET MATERIALS — PROCESSES AND DESIGN

PL 125 **Fee: $45.00, 90 hours, Campus CL**
Tuesday, 7:00 to 10:00 p.m.

The student may select any, or all, of the assignments for the three subject areas listed below.

MATERIALS THERMOSET

Course Content — History and introduction to polyester and epoxy resins, reinforcements and fillers, composites, strength of material definitions.

PROCESSES THERMOSET

Course Content — Theory and application of thermosetting plastic processes, pattern and mould making, hand lay-up, spray-up, filament winding.

DESIGN THERMOSET

Course Content — Design characteristics for glass fibre reinforced plastics; throw-away and plaster tooling; reinforced plastic moulds and tooling; wooden, rubber and metal moulds; cost estimating.

Technical References:

Plastics Engineering Handbook by Society of the Plastics Industry. Publisher: Reinhold.
Handbook of Reinforced Plastics by Oleesky and Mohr. Publisher: Reinhold.
Modern Plastics Encyclopedia. Modern Plastics Magazine. Publisher: McGraw-Hill.
Fibreglas Canada Limited, Booklets Nos. 1, 2 and 3.
Canadian Gypsum Co. Ltd., Bulletin No. IGL102 (re: Plaster Moulds).

FORMING AND FABRICATING OF THERMOPLASTICS

PL 900 **Fee: $20.00, 30 hours, Campus CL**
Tuesday, 7:00 to 10:00 p.m.
October 3, 1972 to December 5, 1972

While the bulk of the thermoplastic articles that we see today are mass-produced on expensive equipment, there are still many articles made by forming and fabrication from sheet, castings, or shapes. Some of these are: car bodies, boats, signs, skylights, architectural models, mechanical models, and works of art.
Equipment required can be quite inexpensive and much of this work can be carried out in the home, using common household tools.
It should be of interest to people who are engaged in this type of production: model-makers, architects, engineers, hobbyists and artists.
Course Content — Machining, forming, welding, cementing, engraving, decorating and finishing of thermoplastics materials.

INTRODUCTION TO PLASTICS

PL 901 **Fee: $20.00, 30 hours, Campus CL**
Thursday, 7:00 to 10:00 p.m.
October 5, 1972 to December 7, 1972

This course comprises lectures and demonstrations and includes materials, their properties and end uses.
Course Content — Thermosets and reinforced thermosets, polystyrenes, vinyls, polyolefins, engineering thermoplastics, reinforced thermoplastics, converting processes, designing with plastics.

EXTRUSION

PL 902 **Fee: $20.00, 30 hours, Campus CL**
Thursday, 7:00 to 10:00 p.m.
January 4, 1973 to March 8, 1973

This course is a prerequisite for a number of other plastics courses.
Prerequisite — PL 901 or equivalent industrial experience.
Course Content — Operating principles, components and nomenclature, drive systems, screw desgin, heating and cooling, instrumentation and control, maintenance, multi-screw extruders.

DESIGNING WITH PLASTICS

PL 903 **Fee: $20.00, 30 hours, Campus CL**
Wednesday, 7:00 to 10:00 p.m.
January 3, 1973 to March 7, 1973

The purpose of this course is to assist designers to understand the properties and processing methods used with plastics material and to select materials appropriate to a product function.
Prerequisite: PL 901 or equivalent industrial experience.
Course Content — Design procedure and design considerations, materials properties, processing methods, testing, case histories.

COMPOUNDING AND COLOURING

PL 904 **Fee: $20.00, 30 hours, Campus CL**
Wednesday, 7:00 to 10:00 p.m.
March 14, 1973 to May 16, 1973

Prerequisite: PL 902 or equivalent industrial experience.
Course Content — Equipment and processes, colour compounding, P.V.C. compounding, dry blending, fire retardents, testing and quality control.

INJECTION MOULDING

PL 905 **Fee: $20.00, 30 hours, Campus CL**
Thursday, 7:00 to 10:00 p.m.
March 15, 1973 to May 17, 1973

Prerequisite: PL 902 or equivalent industrial experience.
Course Content — Injection, clamping, hydraulic systems, electrical controls, heating and cooling, maintenance and troubleshooting.

BLOW MOULDING

PL 906 **Fee: $20.00, 30 hours, Campus CL**
Monday, 7:00 to 10:00 p.m.
March 12, 1973 to May 14, 1973

Prerequisite: PL 902 or equivalent industrial experience.
Course Content — Systems, manifolds, valves, accumulators, dies, moulds, programming, clamping systems, post treatment, maintenance, troubleshooting, testing, quality control.

PLASTIC FILM — PRODUCTION, TESTING AND APPLICATIONS

PL 907 **Fee: $20.00, 30 hours, Campus CL**
Thursday, 7:00 to 10:00 p.m.
March 15, 1973 to May 17, 1973

Course Content — Dies, cooling, film handling systems, winding, treating, printing, cast and laminated film, testing, end uses, bagmaking, printing.

CHEMISTRY (General)

CHEM 100 **Fee: $30.00, 60 hours, Campus CL**
Monday, 7:00 to 10:00 p.m.

Course Content — Methods of Chemistry: Physical and chemical changes, chemical terminology. Organic Chemistry: Structure and reactions of common aliphatic groups. States of Matter: Gas laws, partial pressure. Nuclear Chemistry: Basic nuclear particles, isotopes, radioactivity, half life, radioisotopes and uses. Equilibrium: Rate of reaction, reversibility, LeChatelier's Principle, equilibrium constant, solubility as an equilibrium process, methods of expressing solubility and concentration, ion exchange. Acidimetry and Hydrolysis: Definitions, pH, indicators, titra; ions, relation to oxidation and reduction. Electro-Chemistry: Electrolysis, Faraday's Law, electro-chemical series, corrosion.

CHEMISTRY (Polymer)

CHEM 210 **Fee: $45.00, 90 hours, Campus CL**
Thursday, 7:00 to 10:00 p.m.

Prerequisite: CHEM 100.
Course Content — The chemistry and physics of natural and synthetic polymer covering the following topics: Molecular forces and chemical bonding, molecular weight and its distribution, configurations and conformations of polymer chains, morphology, condensation and addition polymers, copolymers, methods for determining molecular weight of polymers, structure of polymer molecules, how structure determines properties of polymers, testing and degradation of polymers, rheology of polymers. Emphasis will be placed on common plastic materials. Practical work in the laboratory.

COATINGS TECHNOLOGY

CHEM 901 **Fee: $30.00, 60 hours, Campus CL**
Wednesday, 7:00 to 10:00 p.m.

This program is intended to assist paint industry employees, those who have only recently entered the paint and allied raw materials industries, and those who feel the need for a refresher course in the fundamentals of paint technology; their increased knowledge will allow them to function more effectively in the paint industry.
The course has been organized to conform to the standardized basic course in Paint Technology (Organic Coatings I) as outlined by the Federation of Societies for Paint Technology Education Committee.
Course Content — Introduction, extender pigments, white prime pigments, inorganic and organic coloured pigments, colour and its measurements, oils for paint, basic polymer chemistry, alkyd resins, synthetic and natural resins, solvents, driers and paint additives, trade sale finishes (emulsion & solvent based types), exterior finishes for houses and buildings, calculations for formulation, industrial finishes, cellulose derivatives and lacquers, corrosion and chemical-resistant finishes, surface preparation, methods of application, paint manufacture & testing, future trends in coatings.
A comprehensive program of part-time short courses will be offered by The George Brown College in conjunction with the Ontario Chapter of the Canadian Society for Nondestructive Testing. Courses will be conducted at Casa Loma Campus. Registration is to be completed through the Education Committee, CSNT, 29 Colborne Street, Suite 309, Toronto 215, Ontario.
Class schedules are to be provided at a later date. Inquiries about time and cost should be made at the registrar's office, 37 Dartnell Avenue. Phone: 362-3971, Ext. 188 or 190.

ULTRASONIC TESTING I

TEST 900

This will be a basic course in ultrasonic testing, particularly interesting to the individual who is preparing to write his Junior Level Ultrasonic Testing examination. The topics have been selected to give the student the full theoretical background necessary to pass the CGSB test.
Course Content — Introduction and testing philosophy, test principles, applications and capabilities, equipment, testing techniques, calibration.
Textbook: General Dynamics Classroom Training Handbook CT-6-4, Ultra-

Inquiries about time and cost should be made at the registrar's office, 37 Dartnell Avenue. Phone 362-3971, Ext. 188 or 190.

TEST 901 **EDDY CURRENT TESTING I**

A basic course in eddy current testing will be directed to technicians who are using the equipment, to supervisors and others who require a basic understanding of the method, and to those who wish to generally broaden their knowledge in non-destructive testing.
Course Content — Introduction and testing philosophy, test principles, applications and capabilities, equipment, testing techniques, calibration.
Textbook: General Dynamics Classroom Training Handbook CT-6-5, Eddy Current Testing.
Inquiries about time and cost should be made at the registrar's office, 37 Dartnell Avenue. Phone: 362-3971, Ext. 188 or 190.

TEST 902 **ULTRASONIC TESTING II**

This course is specifically directed to the man whose work requires that he be able to interpret the results of an ultrasonic test. An introdutcion to test basics will be given but the stress will be on results and their interpretation. Inspectors, engineers and supervisors will find this course of value.
Course Content — Introduction and testing philosophy, test principles, equipment applications and capabilities, results, records and interpretation, certification procedures and regulatory codes.
Textbook: General Dynamics Classroom Training Handbook CT-6-4, Ultrasonic Testing.
Inquiries about time and cost should be made at the registrar's office, 37 Dartnell Avenue. Phone: 362-3971, Ext. 188 or 190.

TEST 903 **INDUSTRIAL RADIOGRAPHY I**

This course is directed to the radiographer who is eligible to write his Junior Industrial Radiographer examination and provides formal preparation for all phases of the examination. It is also of interest to personnel in supervisory, quality assurance, or affiliated positions who require a knowledge of the fundamentals of radiography.
Course Content — Introduction to electromagnetic spectrum, velocity, frequency, and wavelength of light; generation of x-rays and gamma rays; mathematics of radiography — inverse square law, law of reciprocity; radiographic sensitivity — definition and contrast; aids to radiographic sensitivity; film — types and classes — densitometry — sensitometry; exposure charts; darkroom procedures and processing of film; records and standards; radiation protection — Federal and Provincial Regulations — safe working conditions; radiographic techniques; film interpretation.
Textbook: Canadian Government Specifications Board, Industrial Radiography 48-GP-5.
Inquiries about time and cost should be made at the registrar's office, 37 Dartnell Avenue. Phone: 362-3971, Ext. 188 or 190.

TEST 904 **INDUSTRIAL RADIOGRAPHY II**

This course is specifically directed to the man whose work requires that he be able to interpret the results of X-ray tests. While some time will be spent on equipment and basic principles, the stress will be on results and their

their interpretation. Inspectors, engineers, and supervisors will find this course of value.
Course Content — Basic principles, equipment applications and capabilities, results, records, interpretation, certification procedures, and regulatory codes.
Textbook: Canadian Goverment Specifications Board, Industrial Radiography 48-GP-5.
Inquiries about time and cost should be made at the registrar's office, 37 Dartnell Avenue. Phone: 362-3971, Ext. 188 or 190.

BUSINESS EQUIPMENT SERVICING — Part I

BES 900 **Fee: $30.00, 60 hours, Campus CL**
Tuesday, 7:00 to 10:00 p.m.

The aim of this course is to familiarize the student with the operating principles of the various parts of a typewriter and teach him to correct malfunctions that may occur on these machines.
Prerequisite: Grade 10 or some experience in the business machine field.
Course Content — Checking, troubleshooting, analysis of mechanisms and their operations, corrective adjustments, assembling and disassembling procedures of the major machine parts.

BUSINESS EQUIPMENT SERVICING — Part II

BES 901 **Fee: $30.00, 60 hours, Campus CL**
Monday, 7:00 to 10:00 p.m.

Adding machine servicing — in this course the student will be taught the operating principles and servicing of adding machines.
Prerequisite: Grade 10 or employed in the business machine industry.
Course Content — Theory of adding machines, tape, reading, trouble-shooting, repairing, adjusting, checking and replacement of parts such as printing mechanism, stop section, rack units, power unit and accumulation units.

ELECTRIC WATCH SERVICE

WATCH 900 **Fee: $30.00, 60 hours, Campus CL**
Wednesday, 7:00 to 10:00 p.m.

Prerequisite: Currently employed in watchmaking industry.
Course Content — Introductory electricity, Bulova, Accutron, Hamilton electric watches, Swiss electric watches, Timex electric watches.

WATCHMAKING

WATCH 901 **Fee: $30.00, 60 hours, Campus CL**
Tuesday, 7:00 to 10:00 p.m.

Prerequisite: Currently employed in the watchmaking industry.
Course Content — Lathe work, balance work, hairspring work, clock work, watch conditioning, escapement matching, jewelling, making staffs and stems, adjusting, complicated watches, preparation for Canadian Jewellers' Association examinations.
NOTE: Each section must be successfully completed before further advanced training may be undertaken.

WATCHMAKING (Advanced)

WATCH 902 **Fee: $55.00, 120 hours, Campus CL**
Tuesday and Thursday, 7:00 to 10:00 p.m.

This is a pre-examination course for candidates seeking Ontario certification as a watch repairer.
Prerequisite: applicants must be qualified watchmakers, willing to study modern advanced theory of watch construction, repair and adjustment.

BASIC CLOCK REPAIRING

WATCH 903 **Fee: $30.00, 60 hours, Campus CL**
Tuesday, 7:00 to 10:00 p.m.

This course provides instruction in repairing small mechanisms and clocks. Students will be encouraged to proceed at their own rate according to their abilities and knowledge.
Course Content — Theory: Pendulums and balance wheels as frequency standards, power supply, gearing, escapements, practical solutions to problems frequently occurring, alarm, striking and chiming mechanism.
Shop: Basic tuning, replacing of mainsprings, staffs, suspension springs, fitting of bushings, hole closing, reaming and uprighting, pivoting, clock cleaning, setting up escapements.
Time will be divided between 1 hour lecture and 2 hour shop periods.

PRACTICAL WATCH ADJUSTMENT

WATCH 904 **Fee: $20.00, 30 hours, Campus CL**
Tuesday, 7:00 to 10:00 p.m.

Prerequisite: Currently employed as a watchmaker.
This course has been developed for the watchmaker at the bench. It should help him to do a better job of watch timing and adjusting.
Cousre Content — Theory: Swiss lever escapement, modern watch hairsprings, modern watch balance wheels, fast beat movements and their performance, balance and hairspring theory, effects of friction on position timing, adjustments to isochronism, adjustments to positions.
Shop: Preparations for adjustment, timing machine operations, practical adjustment techniques.

ABOVE KNEE AMPUTATIONS

PROS 900 **Fee: $25.00, 40 hours, Campus CL**
Monday and Thursday, 7:00 to 9:00 p.m.

Prerequisite: Students must be currently engaged as technicians in the prosthetics field.
Course Content — Theory: Anatomy, physiology, pathology, indications for amputation, prescriptions, charts, and knee mechanisms.
Practice: Negative casts, positive casts, modifications, preparation for laminate, vacuum lay-up, manufacturing shins, alignment, transfer, finishing processes.

BELOW KNEE AMPUTATIONS

PROS 901 **Fee: $25.00, 40 hours, Campus CL**

Monday and Thursday, 7:00 to 9:00 p.m.

Prerequisite: Students must be currently engaged as technicians in the prosthetics field, plus completion of PROS 900.

Course Content — Theory: Anatomy, physiology, pathology, indications for amputation, prescriptions, and charts.

Practice: Negative casts, positive casts, modifications, preparation for laminate, vacuum lay-up, manufacturing shins, alignment, transfer, finishing processes.

PROS 900 and PROS 901 will be offered consecutively. Similar courses in orthotics may be offered.

Fashion Technology Courses

DRESSMAKING
FASH 900 Dressmaking I
FASH 901 Dressmaking II
DRAFTING AND DESIGN
FASH 902 Garment Pattern Drafting and Design (Beginner's)
FASH 903 Garment Pattern Drafting and Design (Advanced)
MEN'S CLOTHING
FASH 904 Men's Clothing
FUR
FUR 143 Fur Course I
FUR 144 Fur Course II

FASHION TECHNOLOGY

DRESSMAKING I

FASH 900 **Fee: $30.00, 60 hours, Campus C**

Monday, 7:00 to 10:00 p.m.

Prerequisite: Novice or inexperienced sewer aiming to acquire skills in custom dressmaking.

Course Content — Projects: shifts or jumpers (cotton or bonded fabric), skirts (wool) and/or blouses (cotton). Measurements, relationship of pattern, style and fabric; laying out of pattern, basting, perfect darts, fitting, zippers, collars, sleeves, etc. The student will provide her own material.

DRESSMAKING II

FASH 901 **Fee: $30.00, 60 hours, Campus C**

Wednesday, 7:00 to 10:00 p.m.

Prerequisite: FASH 900 or equivalent.

Course Content — Projects: detailed dresses, skirts and weskits (lined) and gowns. Basic review and evaluation of methods, emphasis on fitting, hand finishes and detail. Application of trims, bound button holes, pockets, hand sewn zippers, etc. The student will provide her own material. Familiarization with knits & stretch fabrics will be achieved if time permits.

GARMENT PATTERN DRAFTING AND DESIGN (Beginners)

FASH 902 **Fee: $30.00, 60 hours, Campus C**

Tuesday, 7:00 to 10:00 p.m.

Prerequisite: This course is for the student who is knowledgeable in dressmaking.

Course Content — The course includes a systematic method of pattern cutting by drafting directly on paper or "on the flat" as it is often called.

1. Drafting the basic foundation pattern for your figure — type and manufacturing sizes.
2. Emphasis on fitting and alteration of patterns.
3. Undertaking the basic principles of the craft, what makes the collar roll a certain way or fit a certain way, what makes a flare, why gathers fall in one direction or another, how darts are used to fit and style effects, why a sleeve is comfortable. You will be able to obtain these effects by designing from a sketch or your original ideas.

GARMENT PATTERN DRAFTING AND DESIGN (Advanced)

FASH 903 **Fee: $30.00, 60 hours, Campus C**
Thursday, 7:00 to 10:00 p.m.

Prerequisite: Successful completion of FASH 902, which includes drafting the basic foundation blocks to personal size and manufacturing size.
Course Content — The course will consist of designing a garment from a sketch or an original idea. It will include creative styling such as coats, suits, sportswear, etc., and also dresswear.

MEN'S CLOTHING I

FASH 904 **Fee: $30.00, 40 hours, Campus C**
Monday and Wednesday, 7:00 to 9:00 p.m.

Prerequisite: This course is aimed at men's apparel store owners and their sales and fitting staff.
To give men currently working in the men's clothing industry a better understanding of the practical side, and to upgrade their knowledge and skills in measuring and fitting customers for made-to-measure garments.
Course Content:
1. Training in taping for stock and made-to-measure garments.
2. Proper "writing-up' 'of orders.
3. Figure description.
4. Training to fit stock suits.
5. Training to give try-ons for made-to-measure garments.

FUR COURSE I

FUR 143 **Fee: $30.00 (plus $5.00 lab. fee), 36 hours, Campus C**
Wednesday, 7:00 to 10:00 p.m.

Prerequisite: salespeople, advertising staff, consumers, etc.
Course Content — The aim is to learn to identify furs in all forms as they appear on the world markets; to learn fur facts versus fantasies and fables; to learn the proper care, approximate expected life, and causes of wear in garments; recognition of 200 furs, nature of fur and hair, wearability, methods of manufacture; styling, history of fur fashions, fur conservation and ecology, storage, fur insurance rates and problems including the cleaning of furs.
Furs will be displayed in skins and on garments; recognition tests will be given. Several information sheets and excerpts from government labelling laws, etc., will be provided.

FUR COURSE II — Manufacturing Techniques, Repairs, Alterations

FUR 144 **Fee: $30.00 (plus $5.00 lab. fee), 60 hours, Campus C**
Tuesday, 7:00 to 10:00 p.m.

Aims of this course are to study the major techniques used in the manufacture of fur apparel for more knowledgeable selling; to learn how to operate a fur sewing machine, block pelts and garments, handle a fur knife; to do simple fur repairs, and alterations; to manufacture a fur ascot, cushion, muff, man's fur hat, or art form.
Prerequisite: Standing in Fur I — fur recognition & fur care/maintenance; experience in fur or apparel industry/sales; potential fur buyers.
Course Content — Review fur recognition with special emphasis on skin placement for beauty and function; fur pattern — basic knowledge; tool and machine knowledge — fur knife, fur sewing machine, blocking tools, dyes and blends; fur selection for garments and accessories; manufacturing techniques — full skin, split skin, "chinchilla" cut, horizontal, "let-out" theory, "hair-up", "hair-down", etc. and their sales features, taping and other operations, "wave-cuts", "seven-cuts", etc.; tricks & tricksters — common methods of dyeing, tipping, etc. to camouflage or beautify furs; the "look-alikes" in fur. Students will buy pelts needed for their own projects. A permanent record of the course will be given to each student by the distribution of information sheets. A certificate will be issued upon successful completion of the course.

Food Technology Courses

DIPLOMA COURSE IN HAUTE CUISINE
FIRST TERM
F 900 Basic Practical Cookery
F 901 Practical Baking and Desserts
F 902 The Art of Fine Dining Part I Home and Abroad
F 903 Principles of Managing Food
SECOND TERM
F 904 Advanced Practical Cookery
F 905 Creative Pastry and Desserts
F 906 Planned Entertaining for Pleasure
F 907 Appreciation of Wines, Spirits & Liqueurs
FOOD TECHNOLOGY
BAKING
BK 10-1A Practical Baking
BK 10-1C Cake Decorating and Design I
COOKING
CHEF 10-1A Practical Cooking Commercial I
F 908X Strictly for Entertainment
WINE MAKING
F 909X Wine Making for the Amateur
BEVERAGE SALES
FA 206 Beverage Sales and Services (Cocktail Bartending)
ACCOUNTING
FADM 211 Hotel Front Office Accounting Procedures
MEAT SERVICES
MC 900 Retail Meat Cutting and Butchery
MC 901 Retail Meat Store Management
DECORATING TECHNIQUES AND DESIGN
BK 138A Part A
BK 138B Part B
BREADMAKING TECHNIQUES
BK 134A Part A
BK 134B Part B
CAKEMAKING TECHNIQUES
BK 135A Part A
BK 135B Part B
COOKIE & BISCUIT TECHNIQUES
BK 136A Part A
BK 136B Part B
CANDY AND CHOCOLATE TECHNIQUES
BK 137A Part A
BK 137B Part B
SANITATION AND HYGIENE
SAN 130A Part A
SAN 130B Part B
QUALITY CONTROL
TF 130A Part A
TF 130B Part B

BAKERY ENGINEERING
BK 139A Part A
BK 139B Part B
CEREAL CHEMISTRY
FT 130A Part A
FT 130B Part B
BAKERY MANAGEMENT
BK 140A Part A
BK 140B Part B

DIPLOMA COURSE IN HAUTE CUISINE

This program is designed to meet the evergrowing demand for knowledge and practical experience in the creation of fine food and entertainment in the home. The entire course consists of 8 individual sections commencing with basic practical cooking; this will give the student the opportunity to apply the principles of cooking, using the raw materials with tested recipes under the guidance of skilled chefs. This section will be followed in sequence by practical baking, the art of fine dining, and the principles of managing food. This will complete the first two semesters. The course will then continue with advanced practical cooking, creative pastry and desserts, planned entertainment for pleasure and appreciation of wines, spirits and liqueurs. Each student, on satisfactory completion of the individual sections, will receive a certificate of competence and, on completion of all the eight sections, will be awarded a diploma in haute cuisine.

First Year

BASIC PRACTICAL COOKERY

F 900 **Fee: $85.00, 60 hours, Campus K**

Tuesday or Wednesday, 6:00 to 10:00 p.m.

Course Content — This course is designed to introduce the basic principles of cooking as related to fine food, to take the raw products and create the basic requirements for classical dishes, sauteing, broiling and stewing, cooking lean and fat fish, seafoods, and the accompanying vegetables, salads, garnishes and dressings, employing the knowledge and expertise of chefs in the use of herbs, spices and wines.

PRACTICAL BAKING AND DESSERTS

F 901 **Fee: $55.00, 40 hours, Campus K**

Wednesday, 6:00 to 10:00 p.m.

This course is designed to equip the student with a practical working knowledge of pastry doughs, choux paste, yeast dough and sponge goods, the use of icings, creams, puddings, custards and other desserts, fruits, tarts, pies and quick breads, the high ratio and angel cake mixes, simple decoration and presentation of birthday and other occasion cakes.

THE ART OF FINE DINING — Part I (Home and Abroad)

F 902 **Fee: $35.00, 21 hours, Campus K**

Tuesday, 7:00 to 10:00 p.m.

This course will introduce the intimate knowledge of fine dining whether at

home, on the town, or abroad, from the simple everyday meal to the more complex and exotic. How to plan the menu with attention to nutrition, quality and balance, the table settings, the floral arrangements, lighting and atmosphere, the techniques of arranging a dinner or luncheon party at your favourite restaurant with attention to the details of special dishes and service that the occasion may demand, choosing guests and seating arrangement and anticipating the tastes of your guests.

PRINCIPLES OF MANAGING FOOD

F 903 **Fee: $40.00, 24 hours, Campus K**

Tuesday, 7:00 to 10:00 p.m.

This course will give the student a sound and sensible approach to the ever present need for better knowledge of food products, their selection and pricing, the recognition of the physicial cuts of meat, the grades of poultry and game, the freshness and grades of fish and seafoods, the time and the season to buy, how to store and preserve foods economically without unnecessary investment, and how to evaluate the advertising of food products.

Second Year

ADVANCED PRACTICAL COOKERY

F 904 **Fee: $85.00, 60 hours, Campus K**

Thursday, 6:00 to 10:00 p.m.

Prerequisite: Basic Practical Cookery.
This course will take the basic principles of cooking and apply them to the classical dishes of the countries in continental Europe, so that the student will be able to produce the French classics, the famed Italian pastas, the Spanish paellas, the Russian coulibiacs, the Scandinavian smorgasbords, the German sauer braten and beer soups, the shish kabobs of Turkey and Greece, the bouillabaisse of Marseilles, the Indian curries, Japanese suki yaki, the nasi goreng of Indonesia and a host of other famous dishes.

CREATIVE PASTRY AND DESSERTS

F 905 **Fee: $55.00, 40 hours, Campus K**

Thursday, 6:00 to 10:00 p.m.

The course will take the basic knowledge of pastry and desserts and allow the development of these techniques to create the patisserie masterpieces, the flamboyant desserts, ice cream bombs, souffles, petits fours, tortes, gateaux, and sugar creations with the decorative centre pieces, the true art of French pastries and their presentation.

PLANNED "ENTERTAINING" FOR PLEASURE

F 906 **Fee: $35.00, 28 hours, Campus K**

Day — to be announced — 6:00 to 10:00 p.m.

Inquiries should be made at the registrar's office, 21 Nassau Street.
Phone: 362-3971, Ext. 121.

This course is designed to give the student a master plan for catering within the home or rented establishment for the larger parties that the hostess may be called upon to organize such as weddings, showers, cocktail parties, lunches, dinners, barbecues, birthday anniversary parties, or any other occasion when

quantity and economics must be given equal attention; in such functions expert planning is the answer.

APPRECIATION OF WINES, SPIRITS AND LIQUEURS

F 907 **Fee: $45.00, 32 hours, Campus K**

Day — to be announced — 6:00 to 10:00 p.m.

Inquiries should be made at the registrar's office, 21 Nassau Street.
Phone: 362-3971, Ext. 121.

This course will be devoted to the knowledge of wines from the standpoint of types, vintage, prices, handling, storage, and correct usage in relation to the menu, the glassware, and the serving temperatures. Guest lecturers will deal with the evaluation by taste of the more distinctive wines.

FOOD TECHNOLOGY

PRACTICAL BAKING

BK 10-1C **Fee: $30.00, 60 hours, Campus K**

Monday, 7:00 to 10:00 p.m.

This course is designed for those who wish basic knowledge of baking. Lectures, demonstrations and student participation are combined to convey both practical and theoretical aspects of the art of baking.
Course Content — Quick breads, pies and tarts, puddings, bread and rolls, sweet yeast products, puff pastries and pate aux choux, icings and fillings, cakes and cookies including ready mixes and other convenience products.

CAKE DECORATING AND DESIGN I

BK 10-1A **Fee: $30.00, 60 hours, Campus K**

Tuesday, 7:00 to 10:00 p.m.

Prerequisite: This course is designed for those persons who wish to learn the art of cake decoration and design.
Course Content — Icings and coatings, royal icing, fondants, butter creams, couvertures, boiled icings and frostings, basic design, techniques of piping, decorating materials, methods, freehand geometric designs, stencils, runouts, prefabricated decorations, lettering, flowers, border design, etc. Cakes for special occasions — techniques and methods.

PRACTICAL COOKING COMMERCIAL I

CHEF 10-1A **Fee: $35.00, 60 hours, Campus K**

Tuesday, 7:00 to 10:00 p.m.

Prerequisites — This course is offered to those persons who have little or no knowledge of cooking, both the food service operator and the homemaker. Lectures, demonstration and student participation are designed to teach practical and theoretical food preparation and cooking. Emphasis will be placed on variations of taste and texture in normal everyday foods.
Course Content — Culinary basics, soups and sauces. Methods of cooking meats, poultry, fish and seafoods. Various methods and techniques of preparing roasts, stews and casseroles with accompanying sauces and garnishes. Salad preparation with suitable dressings. Vegetable and egg cookery and larder preparation are also practised in this program.

STRICTLY FOR ENTERTAINMENT

F 908x **Fee: $35.00, 30 hours, Campus K**
Monday, 7:00 to 10:00 p.m.

Prerequisites: This course is designed for those homemakers having a basic knowledge of cooking but wishing to entertain at home with flair and imagination.
Course Content — A series of lectures and demonstrations. Although the meals prepared are not intended to represent economical fare for the family, the basic principles governing the selection, combination and cooking of food can be applied to everyday use. Each session will be devoted to a complete menu and students will be given the opportunity to taste each dish whenever possible. A selection of complementary wines will be discussed and sampled.

WINE MAKING FOR THE AMATEUR

F 909x **Fee: $30.00, 30 hours, Campus K**
Thursday, 7:00 to 10:00 p.m.

Prerequisites: This course is designed for those persons interested in the art and craft of making wines at home and is open to any person over the age of eighteen.
Course Content — Brief history of wine making, basic wine making equipment, yeast and yeast cultures, stages in wine making, basic methods of testing, analysis and evaluation. Students will be given the opportunity to participate in all stages of the program, including making various types of wines, conducting tests and evaluating the taste of both homemade and commercial wines.

BEVERAGE SALES AND SERVICE (Cocktail Bartending)

FA 206 **Fee: $55.00, 30 hours, Campus K**
Monday, 7:00 to 10:00 p.m.

Prerequisites: A basic course for cocktail bartending. This course is open to men or women 18 years of age, who are currently working full or part time in a licensed establishment.
Course Content — Bar layout and equipment, manufacture of alcoholic beverages, beverage selection, storage and control, duties of the bartender, pre-opening preparation, theory of mixed drinks, practical preparation of mixed drinks and cocktails, sales and service of alcoholic beverages, selection of wines and their service. Human relations relating to licensed establishments.

HOTEL FRONT OFFICE ACCOUNTING PROCEDURES

FADM 211 **Fee: $20.00, 30 hours, Campus K**
Tuesday, 7:00 to 10:00 p.m.

Prerequisites: Grade XII or acceptable hotel/motel experience.
This course is designed for those currently employed in the industry who want a position in the front office, for those currently employed in the front office who seek advancement, and for those in the accounting department who wish to further their knowledge of hotel accounting.
Course Content — The function of the front office and its methods of operation, the theory of proper billing procedures for hotel guests, a demonstration

of the various accounting machines and forms used in the front office, an extensive night audit procedure including practical work on the accounting machines to enable the student to understand and accurately balance a front office audit.

RETAIL MEAT CUTTING AND BUTCHERY

MC 900 **Fee: $30.00, 60 hours, Campus K**
Tuesday, 7:00 to 10:00 p.m.

Prerequisites: This course is designed for persons in junior positions in the retail trade and people interested in the skill of meat cutting.
Course Content — Lecture and demonstration: cutting, grading and characteristics of beef, lamb, pork and veal carcasses, preparation of poultry, fish and shellfish for retail sale, displaying and merchandising of all types of meat products, special lectures on sanitation and refrigeration. Students will participate in meat cutting during the course; this will include boning and tying of various meat products.

RETAIL MEAT STORE MANAGEMENT

MC 901 **Fee: $20.00, 30 hours, Campus K**
Monday, 7:00 to 10:00 p.m.

Prerequisites — This course is offered to those people who have a basic knowledge of meat and who wish to upgrade their knowledge for advancement to the position of manager, and for any person actively engaged in a meat store operation.
Course Cotnent — Financial control of a retail operation, personnel training and relations, buying, receiving, storing for profit, meat department security, display and merchandising techniques, customer relations, sanitation, increasing profits through delicatessen and fish.

DECORATING TECHNIQUES AND DESIGN — Part A

BK 138A **Fee: $30.00, 60 hours, Campus K**
Time — to be announced

Inquiries should be made at the registrar's office, 21 Nassau Street.
Phone: 362-3971, Ext. 121

Prerequisite: All subjects, Grade 10, and actively engaged in the baking industry or allied trades.
Course Content — This program includes a study of equipment necessary to both hand and mechanical operations; a study of ingredients, for example: sugar, sugar products, chocolate, nut pastes; ingredient standards will be tested in laboratory.

DECORATING TECHNIQUES AND DESIGN — Part B

BK 138B **Fee: $30.00, 60 hours, Campus K**
Time — to be announced

Inquiries should be made at the registrar's office, 21 Nassau Street.
Phone: 362-3971, Ext. 121

Prerequisite: Successful completion of part A.
Course Content — During this program, production methods will be studied and practised, together with design work, use of stencils and templates.

BREADMAKING TECHNIQUES — Part A

BK 134A **Fee: $30.00, 60 hours, Campus K**

Time — to be announced

Inquiries should be made at the registrar's office, 21 Nassau Street.
Phone: 362-3971, Ext. 121

Course Content — A study of the ingredients used in breadmaking: flour, yeast, inhibitors, etc., their composition and use. Ingredient testing will also be considered and practised in laboratory work.

BREADMAKING TECHNIQUES — Part B

BK 134B **Fee: $30.00, 60 hours, Campus K**

Time — to be announced

Inquiries should be made at the registrar's office, 21 Nassau Street.
Phone: 362-3971, Ext. 121

Prerequisite: Successful completion of Part A.
Course Content — A study of the production methods and processes from no-time doughs to continuous methods; the equipment necessary for each method will also be studied. Practical comparisons will be completed in the laboratory.

CAKE MAKING TECHNIQUES — Part A

BK 135A **Fee: $30.00, 60 hours, Campus K**

Time — to be announced

Inquiries should be made at the registrar's office, 21 Nassau Street.
Phone: 362-3971, Ext. 121

Course Content — A study of the ingredients used in cakemaking: flour, sugars, fats, cocoa, egg products, inhibitors, etc. Their composition and uses will also be considered, together with ingredients testing in the laboratory.

CAKE MAKING TECHNIQUES — Part B

BK 135B **Fee: $30.00, 60 hours, Campus K**

Time — to be announced

Inquiries should be made at the registrar's office, 21 Nassau Street.
Phone: 362-3971, Ext. 121

Prerequisite: Successful completion of Part A.
Course Content — A study of the production methods and processes, including sponge, 2-stage methods and continuous, and the equipment necessary for each method. Practical comparisons will be included in the laboratory.

COOKIE AND BISCUIT TECHNIQUES — Part A

BK 136A **Fee: $30.00, 60 hours, Campus K**

Time — to be announced

Inquiries should be made at the registrar's office, 21 Nassau Street.
Phone: 362-3971, Ext. 121

Course Content — A study of the ingredients used in the manufacture of cookies, biscuits and crackers, for example: flour, leavening agents, egg products, together with problems involved in formulations. Ingredients testing will also be considered and practised in the laboratory.

COOKIE AND BISCUIT TECHNIQUES — Part B

BK 136B **Fee: $30.00, 60 hours, Campus K**

Time — to be announced

Inquiries should be made at the registrar's office, 21 Nassau Street.
Phone: 362-3971, Ext. 121

Prerequisite: Successful completion of Part A.
Course Content — A study of the production methods and processes, for example: wire-cut, deposit, rotary moulded, together with the equipment necessary for each method. Practical comparisons will be included in the laboratory.

CANDY AND CHOCOLATE TECHNIQUES — Part A

BK 137A **Fee: $30.00, 60 hours, Campus K**

Time — to be announced

Inquiries should be made at the registrar's office, 21 Nassau Street.
Phone: 362-3971, Ext. 121

Course Content — A study of chocolate and chocolate products, including the chemistry of chocolate, sugar and sugar products, their use and handling in candy and chocolate manufacture. This study will also include ancillary ingredients. Ingredient testing will be considered in practical laboratory.

CANDY AND CHOCOLATE TECHNIQUES — Part B

BK 137B **Fee: $30.00, 60 hours, Campus K**

Time — to be announced

Inquiries should be made at the registrar's office, 21 Nassau Street.
Phone: 362-3971, Ext. 121

Prerequisite: Successful completion of Part A.
Course Content — The production methods of candy and chocolates, together with the necessary equipment, will be studied, and tested in the laboratory.

SANITATION AND HYGIENE — Part A

SAN 130A **Fee: $30.00, 60 hours, Campus K**

Time — to be announced

Inquiries should be made at the registrar's office, 21 Nassau Street.
Phone: 362-3971, Ext. 121

Course Content — A study of the types of organisms common to food processing areas, for example, bacteria, moulds and yeasts, together with their role in food spoilage; food poisoning, in theory and laboratory.

SANITATION AND HYGIENE — Part B

SAN 130B **Fee: $30.00, 60 hours, Campus K**

Time — to be announced

Inquiries should be made at the registrar's office, 21 Nassau Street.
Phone: 362-3971, Ext. 121

Prerequisite: Successful completion of Part A.
Course Content — A study of pests common to food establishments and their control, together with regulations governing food establishments. Sanitation procedures will also be considered.

QUALITY CONTROL AND PRODUCT DEVELOPMENT — Part A

TF 130A **Fee: $30.00, 60 hours, Campus K**

Time — to be announced

Inquiries should be made at the registrar's office, 21 Nassau Street.
Phone: 362-3971, Ext. 121

Course Content — A study, both practical and theoretical, of test baking methods, scoring and control procedures, product assessment and evaluation, and the development of new varieties of baked products.

QUALITY CONTROL AND PRODUCT DEVELOPMENT — Part B

TF 130B **Fee: $30.00, 60 hours, Campus K**

Time — to be announced

Inquiries should be made at the registrar's office, 21 Nassau Street.
Phone: 362-3971, Ext. 121

Prerequisite: Succesful completion of Part A.
Course Content — A study of quality control measures, from the incoming ingredients to the finished product, including statistical control measures, random selection, and in-plant product evaluation. Laboratory practice will also be included.

BAKERY ENGINEERING AND EQUIPMENT — Part A

BK 139A **Fee: $30.00, 60 hours, Campus K**

Time — to be announced

Inquiries should be made at the registrar's office, 21 Nassau Street.
Phone: 362-3971, Ext. 121

Course Content — Basic physics, engineering drawing, mechanics, electricity, and heat exchange.

BAKERY ENGINEERING AND EQUIPMENT — Part B

BK 139B **Fee: $30.00, 60 hours, Campus K**

Time — to be announced

Inquiries should be made at the registrar's office, 21 Nassau Street.
Phone: 362-3971, Ext. 121

Prerequisite: Successful completion of Part A.
Course Content — The knowledge gained in Part A will be applied to bakery and equipment, and its efficient use. Faults and breakdowns, plant layout, and preventative maintenance scheduling will also be included.

CEREAL CHEMISTRY AND TECHNOLOGY — Part A

FT 130A **Fee: $30.00, 60 hours, Campus K**

Time — to be announced

Inquiries should be made at the registrar's office, 21 Nassau Street.
Phone: 362-3971, Ext. 121

Course Content — The botany and chemistry of the following cereals will be studied, together with the various types of mill processes: wheat, rye, barley, rice, oats, sorghum etc.

CEREAL CHEMISTRY AND TECHNOLOGY — Part B

FT 130B **Fee :$30.00, 60 hours, Campus K**

Time — to be announced

Inquiries should be made at the registrar's office, 21 Nassau Street.
Phone: 362-3971, Ext. 121

Prerequisite: Successful completion of Part A.
Course Content — This course is a study of the uses of cereals after the milling process, including the chemical and physical changes that take place under such further processing as panary fermentation, malting, baking and breakfast cereal production.

BAKERY MANAGEMENT — Part A

BK 140A **Fee :$30.00, 60 hours, Campus K**

Time — to be announced

Inquiries should be made at the registrar's office, 21 Nassau Street.
Phone: 362-3971, Ext. 121

Course Content — A study of bakery management, which includes general managerial principles, supervisory practice, general accounting principles and their application in bakeries.

BAKERY MANAGEMENT — Part B

BK 140B **Fee :$30.00, 60 hours, Campus K**

Time — to be announced

Inquiries should be made at the registrar's office, 21 Nassau Street.
Phone: 362-3971, Ext. 121

Prerequisite: Successful completion of Part A.
Course Content — This program includes the preparation of work schedules for individual employees, production schedules for a variety of types of production lines, work study in the bakery and its applications.

Graphic Arts Part-Time Courses

TYPOGRAPHY
GR 100 Introduction to Typography

MONOTYPE & PHOTO COMPOSITION
GR 200-A Montoype Keyboard (Basic)
GR 200-B Monotype Caster (Operating Course)
GR 202 Photocomposition (Operating Course)
GR 203 Monotype Keyboard (Advanced)
GR 204 Paste Make-Up and Ruling (Basic)
GR 208 Photocomposition (Basic Maintenance)
GR 209 Photocomposition (Advanced Maintenance)

PASTE-UP
GR 211 Paste Make-up and Film Assembly (Advanced)

MARK-UP
GR 911 Cold Type Mark-Up (Advanced)

PHOTOMECHANICAL REPRODUCTION
GR 105 Photomechanical Reproduction (Black & White Basic)
GR 205 Photomechanical Reproduction (Black & White Advanced)
GR 305 Photomechanical Colour Reproduction Offset (Basic Colour Separation)
GR 307 Colour Reproduction (Rotogravure)

FILM IMPOSITION
GR 110 Film Imposition & Printing Surface Preparation (Basic Stripping)
GR 210 Film Imposition & Printing Surface Preparation (Advanced Stripping)
GR 310 Film Imposition & Printing Surface Preparation (Colour Stripping)

DIE CUTTING & EMBOSSING
GR 314 Die Cutting & Embossing.

MACHINE PRINTING
GR 115 Machine Printing (Basic Offset)
GR 116 Machine Printing Single Colour Offset (Basic)
GR 215 Machine Printing (Rotogravure Flexography)
GR 216 Machine Printing Single Colour Offset (Intermediate)
GR 217 Machine Printing Two Colour Offset (Intermediate)
GR 316 Machine Printing Two Colour Offset (Advanced)

BINDING
GR 125 Binding & Finishing

QUALITY CONTROL
GR 220 Quality Control

SCREEN PROCESS
SP 900 Screen Process Printing
SP 901 Screen Process Printing (Basic)

COMMERCIAL ART
CA 900 Commercial Art

GRAPHIC ARTS

General Note:
Successful completion of three courses at successive levels in the same subject will merit a special subject certificate (e.g., completion of GR 105, GR 205, and GR 305 for a Camera Certificate or GR 115, GR 116 and GR 216 for Single Colour Offset Press Certificate). Credits may be accumulated towards the diploma for the technician program.

INTRODUCTION TO TYPOGRAPHY
GR 100
Fee: $30.00, 60 hours, Campus T
Wednesday, 7:00 to 10:00 p.m.

This course is designed to provide a general appreciation of the subject through a balanced program of illustrated lectures and practical work. It will also provide the layman with a comprehensive background to enable him to make his own critical assessment in the typographic design field. The emphasis throughout the course will be on the contemporary scene. The historical and technical aspect will be covered only in as much detail as an understanding of contemporary work is required.
Course Content — A definition of typography, historical and technical development, the relationship with other arts, basic principles of design, working methods, typography in various media — books, brochures, advertising etc., future development, preparation of mechanicals and illustrations.

PHOTO MECHANICAL REPRODUCTION (Black & White Basic)
GR 105
Fee: $55.00, 60 hours, Campus T
Tuesday or Wednesday, 7:00 to 10:00 p.m.

Prerequisites: Preference will be given to candidates employed in the graphic arts industry.
Course Content — The operation and maintenance of process cameras, the calibration of process cameras and darkroom equipment for the making of line, fineline and halftone negatives, the application of coloured filters and the use of panchromatic film, the PMT process, photographic contacts, duplicates, spreads and chokes, the theory of the photographic process, lenses, light sources, film emulsions and processing solutions.

FILM IMPOSITION AND PRINTING SURFACE PREPARATION
GR 110
(Basic Stripping)
Fee: $55.00, 60 hours, Campus T
Monday and Tuesday, 7:00 to 10:00 p.m.

Prerequisites: Preference will be given to candidates employed in the graphic arts industry.
Course Content — The basic procedure for black and white stripping, job planning, layout and imposition, photographic contacts, laying up line negatives, halftones, duo tones, and stripping for more than one colour.

MACHINE PRINTING (Basic Offset)
GR 115
Fee: $45.00, 60 hours, Campus T
Tuesday, 6:00 to 10.00 p.m.

Prerequisites: Preference will be given to the candidates who have some

knowledge of offset duplicators.
Course Content — A beginners' course covering the fundamentals of offset lithography, feeding, dampening systems (both conventional and alcohol), ink control, and running of one colour, multi-colour and process colour projects. This program leads to GR 116, Single Colour Press, Offset Lithography.

MACHINE PRINTING — SINGLE COLOUR OFFSET PRESS (Basic)

GR 116 **Fee: $55.00, 60 hours, Campus T**
Tuesday, 6:00 to 10.00 p.m.

Offset lithography on single colour Heidelberg, Harris and Miehle presses. (Basic).
This course is designed for candidates with a working knowledge of printing and printing machinery.
Prerequisites: Completion of GR 115 or equivalent.
Course Content — A basic course covering the fundamentals of lithography, dampening systems (both conventional and alcohol), ink control, and running one colour and two colour projects.

BINDING AND FINISHING

GR 125 **Fee: $30.00, 60 hours, Campus T**
Monday, Tuesday, Wednesday and Thursday (as required), 7:00 to 10:00 p.m.

Prerequisites: Elementary mathematics and ability to follow instructions in English.
Instruction will be in the use of a selection of the following equipment with an aim of bringing the student to production standards:
26x40, Model 433, Mark II, Baum Folder, Dial-O-Matic Feed Muller, Type 201 Super Gathering Machine; three feeding station Smythe No. 12 Book Sewing Machine.
Bostitch No. 19 E Stitcher.
Challenge RKH Paper Drill with Rounding Cornering Attachment.
Hobbs 50 inch Bench Shear.
Shaeffer 22 inch Gluer.
Hickock 00 ½ Standing Press.
42 inch Seybold Citation Autospacer, 12 Channel.
Muller Pony 5 Roto Binder.
Muller Automatic Stitcher, one Automatic & two Hand Feed Stations.
Christensen Gang Stitcher, Five Stations, Hand.
17x22 Baum Folder, Pile Feeder.
Job Backer.
Cohasset Tipper.
Stamping Press.
Cerlox Table Top Combo.
Table Stripper.
Casemaking Gauge.
6 Sewing Frames.

MONOTYPE KEYBOARD (Basic) — Level: Intermediate

GR 200A **Fee: $70.00, 60 hours, Campus T**
Monday, 5:00 to 8:00 p.m.

Prerequisite: Hand composition and typewriting ability to 40 corrected wpm on a ten-minute test.
This course is intended to teach the basics of the monotype keyboard system. This introductory course involves the setting of a sraightforward typesetting work; flush left; flush right; centered, leaderwork; and balance sheet modes. Persons completing this course successfully should find little difficuly in adapting to even phototypesetting keyboard systems which are, if anything, simpler. For those who lack the requisite typing skill, attention is drawn to The George Brown College's lumisonic typing course.

MONOTYPE CASTER (Operating Course) — Level: Intermediate

GR 200B **Fee: $70.00, 60 hours, Campus T**
Monday, 5:00 to 8:00 p.m.

Prerequisites: Hand composition; linecaster operation; or monotype keyboard.
The purpose of this course is to introduce the student to the monotype system, and operating mechanisms, and to enable the student to set up and operate the composition caster. The course content includes the set and unit system mechanical operation; pump mechanism maintenance; mould maintenance; matrix arrangements; sizing and line-up procedures; and the running of both sorts and job ribbons.

PHOTOCOMPOSITION (Operating Course)

GR 202 **Fee: $55.00, 60 hours, Campus T**
Wednesday, 7:00 to 10:00 p.m.

Prerequisites: 40 wpm touch typing, with no more than 4% errors in a 10-minute test and two years of typesetting knowledge.
This course should enable the student to become a competent tape puncher with sufficient speed and accuracy for employment in industry.
The student will become familiar with the 64 codes of the 6-level TTS tape. There will be an introduction to the processing of the perforated tape and students will process their own tapes, using the Justape computer, Linofilm Quick, Photo 713-10/20 Textmaster, and the IBM PT/SC. Students will learn to punch representative function codes to produce tape suitable for various forms of computerized and electronic photocomposition processing. There will be practice in substituting 6-level for 8-level codes and an introduction to the uses of 8-level codes.
The main objective is for the student to become efficient in perforating 6-level endless tape, but he will also obtain practice in representative methods of tape processing.

MONOTYPE KEYBOARD (Advanced) — Level: Advanced

GR 203 **Fee: $70.00, 60 hours, Campus T**
Saturday, 9:00 a.m. to 12:00 noon

Prerequisites: A grade of at least B in monotype keyboard (basic) or experience in this field.
An intensive work-oriented course designed to teach ideal methods of setting

tables, unusual shapes, French, and other complex typesetting problems. Included in this course will also be basic keyboard maintenance and other peripheral information.

PASTE MAKE-UP AND RULING (Basic)

GR 204 **Fee: $55.00, 60 hours, Campus T**
Tuesday, 6:00 to 10:00 p.m.

Prerequisites: One year of typesetting experience.
This course teaches the basic skills required in the making up of pages using paper positives to produce camera ready paste-ups. The student will be expected to successfully complete a wide range of jobs from the simple letterhead to the imposition of an 8-page brochure. Included will be the utilization of display setting machines, transfer sheets, prints and screened prints which will be exposed and developed in a darkroom. Ruling will be done using both hand methods and machines. Depending on the composition of the class, the emhpasis may be on commercial or newspaper paste-up techniques.

PHOTOCHEMICAL REPRODUCTION (Black & White Advanced)

GR 205 **Fee: $55.00, 60 hours, Campus T**
Thursday, 7:00 to 10:00 p.m.

Prerequisites: This course is designed for persons who have completed basic camera (GR 105) or who have equivalent industrial experience.
Course Content — The operation, maintenance and control of film processors, densitometry and the use of densitometers, calibration and use of gray, magenta negative and magenta positive contact screens, how to programme a halftone reproduction system using instrumentation, exposure control and automatic film processing, duotones, posterisation and an introduction to direct colour separation.

PHOTOCOMPOSITION (Basic Maintenance) — Level: Intermediate

GR 208 **Fee: $55.00, 60 hours, Campus T**
Wednesday, 7:00 to 10:00 p.m.

Prerequisites: Typesetting experience.
This course deals with the fundamentals of phototypesetting and is designed to acquaint students with the applications of both general and specific computers to the typesetting industry. Presentation is by film, lecture and on-machine operation. The first part of the course deals with the fundamental function and operation of the Photon 713-10/20 and the student is acquainted with the operating principles of the machine. Basic logic, flow charting and low level programming are dealt with. At the completion of this course a candidate will be capable of programming character position and width values into the memory unit. He will also be capable of basic mechanical maintenance in such areas as removal and cleaning of film strips, changing of exciter lamp bulbs, and reader adjustments.

FILM IMPOSITION AND PRINTING SURFACE PREPARATION

GR 210 **(Advanced Stripping)**
Fee: $55.00, 60 hours, Campus T
Wednesday, 7:00 to 10:00 p.m.

Prerequisites: This course is designed for persons who have completed basic

stripping (GR 110) or who have equivalent experience in the graphic arts industry.
Course Content — Black and white stripping, imposition, spreads and chokes, photographic contact, fake colours, four colour processes, step and repeat using pin register system, and introduction to the programming and operation of a photocomposing machine.

PHOTO COMPOSITION (Advanced Maintenance) — Level: Advanced

GR 209 **Fee: $55.00, 60 hours, Campus T**
Saturday: 9:00 a.m. to 12 noon

Prerequisites: A grade of B or higher in the GR 208 course or proof of experience in phototypesetting to a similar level.
The advanced maintenance course in photocomposition is primarily concerned with trouble shooting techniques and necessary routine maintenance procedures. A far more detailed description of logic function is entered upon and the student learns how a tape code is translated into a position and a width value internally. A deeper understanding of the arithmetic functioning of the logic unit is also conveyed and malfunctions are contrived in the unit to better illustrate the effects of pac failure. Students are encouraged to participate to the full under close supervision. A great deal of the information and many of the techniques utilised in this course are directly applicable to other phototypesetting devices and this course should not be construed as being limited to trouble shooting on the Photon 713-10/20.

PASTE MAKE-UP AND FILM ASSEMBLY (Advanced)

GR 211 **Fee: $55.00, 60 hours, Campus T**
Thursday, 7:00 to 10:00 p.m.

Prerequisites: Paste Make-up and Ruling Course GR 204 or experience in paste-up obtained in industry.
This is a review of the material covered in the paste make-up course before entering upon the film assembly technique. Included is an assessment of quality of reproductions; assembly of required materials; hand ruling and the use of various drawing instruments. There will be the make-up and correction of positive film from phototypesetting machines along with other photo products.

MACHINE PRINTING (Rotogravure, Flexography)

GR 215 **Fee: $55.00, 60 hours, Campus T**
Tuesday, 7:00 to 10:00 p.m.

This course is designed to acquaint students with the principles of roll feed printing equipment.
Prerequisites: Experienced personnel presently employed in rotogravure or flexographic pressroom work.
Course Content — Fundamentals of rotogravure, and flexographic printing process. Rolls, inks, tension controls, doctor blades, register, electrical controls, oven dryer, rewind.

MACHINE PRINTING — Single Colour Offset Press (Intermediate)

GR 216 **Fee: $55.00, 60 hours, Campus T**
Thursday, 6:00 to 10:00 p.m.

Offset lithography on single colour Heidelberg, Harris and Miehle Presses. (Intermediate).
This course is designed for the student who wants to upgrade his present skill or has completed GR 116.
Prerequisites: Candidates who want to upgrade their present skill or who have completed GR 116.
Course Content — Colour matching. Projects run during this course will include one colour, multi-colour and process work.

MACHINE PRINTING — Two Colour Offset Press (Intermediate)

GR 217 **Fee: $55.00, 60 hours, Campus T**
Tuesday, 6:00 to 10:00 p.m.

Offset lithography on two-colour Harris and Miehle Presses.
Prerequisites: Candidates presently running single colour presses or having completed GR 216.
Course Content — Fundamentals of offset lithography, feeding, inking systems, dampening ssytems, (conventional and alcohol), press familiarization, theory and practical application of two-colour offset printing.
This course leads to advanced pressmanship GR 316.

PROCESS QUALITY CONTROL

GR 220 **Fee: $45.00, 60 hours, Campus T**
Tuesday, 7:00 to 10:00 p.m.

Prerequisites: Experience in technical sales and services, present employment as supervisor in a printing plant or employed in the quality control department of printing, paper and ink industries.
Course Content — Paper: Manufacture of paper and board, paper properties and their requirements for each printing method. Coated and uncoated paper. Problems related to runnability and printability. Basic quality control tests for paper properties.
Ink: Basic raw materials, the formulation of inks and their properties as related to each printing process. Ink, paper and the printing press relationship. Planning and co-ordination of ink and paper properties for optimum print quality. Tests for ink quality control and trouble shooting.

PHOTOCHEMICAL COLOUR REPRODUCTION (Offset)
(Basic Colour Separation)

GR 305 **Fee: $55.00, 60 hours, Campus T**
Monday, 7:00 to 10:00 p.m.

Prerequisites: This course is designed for persons who have completed advanced camera (GR 205) or who have equivalent experience in industry.
Course Content — The operation and control of film processors, densitometers, enlargers and other equipment required for colour separation photography; basic colour theory, tone reproduction and colour correction; direct and indirect colour separation procedures including photographic masking; making screened positives including contrast control with CC filters.

COLOUR REPRODUCTION (Rotogravure)

GR 307 **Fee: $55.00, 60 hours, Campus T**
Monday, 7:00 to 10:00 p.m.

Prerequisite: Extensive industrial experience in line and halftone photography.
Course Content — This course is intended as an introduction to basic colour separation procedures, and will include the theory of colour reproduction, tone and colour correction, densitometry and characteristic curve. Dye masks and silver masks will be used to make continuous tone separation negatives and positives as well as screen negatives and positives from a colour transparency. Students will gain practical experience in colour separation using enlarger, automatic processors, densitometers, etc.

FILM IMPOSITION AND PRINTING SURFACE PREPARATION
(Colour Stripping)

GR 310 **Fee: $55.00, 60 hours, Campus T**
Thursday, 7:00 to 10:00 p.m.

Prerequisites: This course is designed for persons who have completed the advance stripping (GR 210), or who have equivalent experience in the graphic arts industry.
Course Content — This course consists of the operation of the photocomposing machine for four colour process and mechanical colours. It includes also dot etching and quality black and white stripping.

MACHINE PRINTING — Two Colour Offset Press (Advanced)

GR 316 **Fee: $55.00, 60 hours, Campus T**
Thursday, 6:00 to 10:00 p.m.

Prerequisites: Completion of GR 217 or equivalent industrial experience.
Course Content — Register, cylinder arrangements, application of Ph, pressroom chemistry, paper, ink, colour matching and densitometer application. Projects run during this course will include two-colour, multi-colour and process colour work. Upon completion of this course a day school credit is obtained.

COLD TYPE MARK-UP (Advanced)

GR 911 **Fee: $45.00, 42 hours, Campus T**
Tuesday, 5:30 to 8:30 p.m.

This course is intended for journeymen wishing to enter the exacting field of cold type mark-up. Work produced by members of this course is processed under working conditions. The intention of this is to provide a realistic set of circumstances.
Prerequisites: Three years a compositor (hand or mechanical operator).
Course Content — includes the evolution of typefaces; type classification; and type identification. The course will progress from basic hot metal mark-up to complex cold type mark-up. A tour of one or more trade plants will be included.

DIE CUTTING AND EMBOSSING

GR 314 **Fee: $45.00, 60 hours, Campus T**
Thursday, 7:00 to 10:00 p.m.

Prerequisite — As a minimum must be a second year apprentice letterpress-

man.
Course Content — Following a refresher or instruction on platen and cylinder press as required, the course will cover die manufacturing processes; die-cutting and creasing; perforation slot cutting; plate sinking; hot and cold embossing and a demonstration of foil stamping.

SCREEN PROCESS PRINTING

SP 900 **Fee: $30.00, 60 hours, Campus C**
Monday, 7:00 to 10:00 p.m.

This course is designed for persons currently employed in this field who wish to upgrade their skills in the more specialized methods of the photographic process.
Course Content — The operation of the process camera, line and halftone film-making; the photo-screening method of silk screen reproduction; preparation of direct screen emulsion stencils, the application and procedure for good screen making.

SCREEN PROCESS PRINTING (Basic)

SP 901 **Fee: $30.00, 60 hours, Campus C**
Tuesday, 7:00 to 10:00 p.m.

This course is designed for persons not in the industry, but who wish to attain skills in basic stencil cutting, screen making and printing.

COMMERCIAL ART

CA 900 **Fee: $50.00, 60 hours, Campus C**
Monday and Wednesday, Tuesday and Thursday, 7:00 to 9:00 p.m.

Prerequisites: Interest in art.
Course Content — Commercial art, life drawing, batik, watercolour, painting and printmaking.
Classes will be formed in accordance with interests and number of registrants.
Students must pay for their own materials.

Special Techniques Courses

HAIRSTYLING & HAIRDRESSING
BARB 900 Men's Hairstyling
BARB 901 Barbers' Precertification
HAIR 900 Ladies' Hairstyling (Advanced)
HAIR 901 Hairdressers' Precertification
SECURITY
ST 906 Retail Security Orientation
CRAFTS
ST 907 Design in Wool
ST 909 Weaving
ST 910 Stuffed Toys and Animals

SPECIAL TECHNIQUES

MEN'S HAIRSTYLING

BARB 900 **Fee: $30.00, 60 hours, Campus K**
Wednesday, 7:00 to 10:00 p.m.

Prerequisite: Ontario Certificate of Qualificaton and currently employed.
Course Content — practical haircutting, shampoos, discussion on styles, styling and blow waving, tinting, bleaching, processing, razor cutting, hair pieces.

BARBERS' PRECERTIFICATION

BARB 901 **Fee: $30.00, 60 hours, Campus K**
Monday, 7:00 to 10:00 p.m.

Prerequisite: Students must be registered apprentices who have completed their training but require a review of theory for the Certificate of Qualification exam.
Course Content — A complete review of the theory of the trade as taught to apprentice classes in the full-time day course.

LADIES' HAIRSTYLING (Advanced)

HAIR 900 **Lab fee $24.00, Total fee $60.00, 60 hours, Campus K**
Monday and Wednesday, 7:00 to 10:00 p.m.

Course Content — review of basic techniques, advanced methods of scissor cutting, blow waving, ironing, back-combing and back-brushing techniques, handling long hair, hair pieces and current fashion trends.
Prerequisite: Ontario Certificate of Qualification and currently employed.

HAIRDRESSERS' PRECERTIFICATION

HAIR 901 **Fee: $30.00, 60 hours, Campus K**
Wednesday, 7:00 to 10:00 p.m.

Prerequisite: Students must be registered apprentices who have completed their training but require a review of theory for the Certificate of Qualification exam.
Course Content — A complete review of the theory of the trade as taught to apprentice classes in the full-time day course.

RETAIL SECURITY ORIENTATION

ST 906 **Fee: $20.00, 30 hours, Campus C**
Monday, 7:00 to 10:00 p.m.

Prerequisite: A desire to minimize retail security problems. The course will deal with the many aspects of the security program including systems and controls.
Course Content — Enhancing retail security by learning how to deal with problems of shoplifting (including juveniles), dishonest employees, imposters, fraudulent cheque operators.

DESIGN IN WOOL

ST 907 **Fee: $30.00, 60 hours, Campus C**
Thursday, 7:00 to 10:00 p.m.

Prerequisites: A desire to express creative ability through the medium of wool and its structure.
Course Content — The course is designed to give a basic understanding of the layout and progressive construction of crochet wool hangings, murals and mobiles through the medium of wool. The effects of lighting, rhythm and the direct and indirect movement of wool in producing frame and curved designs will develop. The designing and making of wool jewellery, earrings, necklaces, Indian bibs and breast plates should produce a challenge to the most vivid, creative imagination.

WEAVING

ST 909 **Fee: $55.00, 30 hours, Campus T**
Thursday, 7:00 to 10:00 p.m.

Prerequisite: A keen desire to learn hand weaving.
Course Content — Beginners will learn the basics of hand weaving which will include practical instruction and theory in plain and twill weave. Finger technique, project work and overshot weaving will result as experience is gained on the 27-inch floor looms.
Materials extra.

STUFFED TOYS AND ANIMALS

ST 910 **Fee: $30.00, 60 hours, Campus C**
Thursday, 7:00 to 10:00 p.m.

Prerequisite: A knowledge of basic sewing along with recreational interest.
Course Content — The course will introduce the proper layout of patterns so that cutting and fitting will coincide in producing a well made product which will necessitate proper stitching, stuffing and invisible finishing. Particular attention will be paid to faces, wigs and movable arms. Sources of material, manufacture and sale of finished product and possible markets will be presented.

OFF CAMPUS COLLEGE COURSES

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Creative Executive Management
Management for Results
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Basic Financial Controls
Credit and Collections
Effective Use of Electronic Data Processing
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Finance and Taxation
Planning for Profits
Understanding Cost Accounting

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Labour Relations
Labour Relations, Construction
Human Relations
Effective Communications
Production
Construction
Administration
Mining
Hospitals
Hospitality

MARKETING MANAGMENT

Retail Selling
Retail Management
Psychology of Professional Selling
Marketing for the Hospitality Industry
Marketing for the Tourist Industry
Marketing for Manufacturers
Marketing for the Middleman
Marketing for Service Business
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TEACHING
ED 900 Teaching Techniques
EFFECTIVE SUPERVISION
ES 900 Production
ES 901 Construction
ES 902 Administration
ES 905 Communication
ES 906 Municipal Government
RELATIONS
ES 903 Human Relations
ES 904 Labour Relations

PROFESSIONAL DEVELOPMENT

TEACHING TECHNIQUES

ED 900 **Fee: $30.00, 60 hours, Campus CL**
Wednesday, 7:00 p.m. to 10:00 p.m.

This course is designed for people in industry, commerce, the professions and adult education who have an interest in the instruction of other people. It is a basic course combining a minimum of pedagogical theory with practical instructional technique.
Course Content — Theories of learning — adult learning — individual differences — subject analysis — lesson planning — curriculum development — lesson types — teaching aids — evaluation — practice teaching — critical appraisals of teaching techniques.

SPECIAL COURSES IN SUPERVISION

The following courses are designed to provide additional training for those who are employed in the supervisory field or are considering employment in this area. Classes will meet one evening a week for ten weeks and may be conducted either at The George Brown College or on company premises.

EFFECTIVE SUPERVISION — PRODUCTION

ES 900 **Fee: $50.00, 25 hours, Campus CL**
Thursday, 7:00 to 9:30 p.m.

This course covers a broad segment of industrial supervision, presenting the philosophical and elementary technology background. It is designed especially for the supervisor and foreman.
The four specific objectives are —
to identify the supervisor's function; to reduce waste of human and financial resources; to reduce basic work and material content; and to improve the motivational climate of the organization.
The ten sessions are: The Role of the Supervisor — Principles of Effective Supervision — Initiating Proper Action — Motivation of the Worker — Setting Objecives and Goals — Planning — Scheduling — Measuring Results and Evaluating Efficiency — Improvements — Getting a Day's Work Done.
The case study method will provide the subject matter for each session.

EFFECTIVE SUPERVISION — CONSTRUCTION

ES 901 **Fee: $50.00, 25 hours, Campus CL**

Thursday, 7:00 to 9:30 p.m.

The Construction Supervision Course has as its objective the increased effectiveness of the supervisor and foreman in a mechanical, electrical or general contracting job. The course covers the fundamental activities of a manager, including production planning and control techniques which are related to this type of work. These are taught in a series of case studies set in appropriate construction situations.

In keeping with modern control techniques, the student is introduced to Critical Path Method and is taught to use it as an aid to effective project management. The course is ten sessions in length, each of approximately two hours duration.

EFFECTIVE SUPERVISION — ADMINISTRATION

ES 902 **Fee: $50.00, 25 hours, Campus CL**

Tuesday, 7:00 to 9:30 p.m.

The object of the course is to improve the ability of the supervisor. It is designed for supervisors in administrative, office, clerical, professional, technical, financial and commercial fields. It will be beneficial to those in both profit-oriented and service industries, in government organizations, in small, medium or large enterprises. The administrative supervision course can be taken in place of the production or construction courses.

The ten sessions are: The Role of the Supervisor — Principles of Effective Supervision — Analyzing the Problem — Setting Objectives and Goals — Organizing and Planning — The Human Factor — Flow of Information — Improvement — Evaluating Operations and Controlling Activities — Managing High Talented Personnel.

In each session the student will apply problem-solving techniques to a typical administrative situation.

The material provided includes up-to-date ideas in productivity improvement and systems analysis.

The course is ten sessions in length, each of approximately two hours duration.

HUMAN RELATIONS

ES 903 **Fee: $50.00, 25 hours, Campus CL**

Wednesday, 7:00 p.m. to 9:30 p.m.

The objective of this course is to help the supervisor to deal effectively with his problems in the area of personnel management. Using the case method, the student in effect learns by "doing" and studies human relations in accordance with modern management concepts. The cases iclude a cross-section of incidents in various business concerns.

The ten sessions are: Understanding People — Selection and Induction — Training Employees — Developing and Maintaining Morale — Elements of Wage and Salary Administration — Effective Communications — Appraising Employee Performance — Discipline and Corrective Action — Understanding the Collective Agreement — Planning and Organizing for Results.

Two alternate sessions are available: Leadership — Resistance to Change.

LABOUR RELATIONS

ES 904 **Fee: $50.00, 25 hours, Campus CL**

Thursday, 7:00 to 9:30 p.m.

This seminar is designed to help the supervisor and foreman deal effectively with aspects of labour relations, both where collective agreements have already been established and where certification may become possible.

The student will study this very important subject by working through a series of "case studies", each case specializing in a particular problem. Various businesses are considered in order that the class gain experience in a variety of settings.

The course consists of ten sessions (each of approximately two hours duration) entitled:

Employer — Employee — The Relationship — Establishment of Bargaining Rights — Negotiations for a Contract — Content of Collective Agreement — Union Security — Management Rights — Complaints — Grievances and Arbitration — Wages — Classification and Benefits — Relationship Arising out of Contracts — Administration of the Collective Agreement.

EFFECTIVE SUPERVISION — COMMUNICATIONS

ES 905 **Fee: $50.00, 25 hours, Campus CL**

Tuesday, 7:00 to 9:30 p.m.

This course has been designed to make the supervisor aware of the importance of communications. It is recognized that a basic need of all managers is that they be able to communicate.

The course is ten sessions in length and will give ample practice in the methods of effective communications, together with the reasons for their use.

The ten sessions are: Communication: Its Meaning and Definition — Communication: Problems through several Levels — Communication: Additional Problems — Communication is a Two Way Street — Communication through Conversation — Let's Learn to Listen — Communication through Practice — Barriers to Communication — Verbal Communication — Rules of What and How — The Written Communication.

SUPERVISORY PRACTICES IN MUNICIPAL GOVERNMENT

MUNICIPAL GOVERNMENT

ES 906 **Fee: $55.00, approx. 38 hours, Campus CL**

Monday, 7:00 to 10:00 p.m.

This is a 15-week course on being a supervisor in a civic government department.

It will be taught by the case study method once a week for 2 to 2½ hours.

The major topics covered are:

Unit I	Elements of Supervision
Unit II	Leadership
Unit III	Management Needs Organization and Management Ideas
Unit IV	Job Planning
Unit V	Getting Action
Unit VI	How to Improve Methods
Unit VII	Induction of New Employees
Unit VIII	How to Develop and Maintain Discipline
Unit IX	The Supervisor as a Counsellor
Unit X	Complaints and Grievances
Unit XI	Appraisal
Unit XII	On the Job Instruction
Unit XIII	Safety
Unit XIV	Cooperation within the Civic Service
Unit XV	Human and Public Relations

ADVANCED TECHNICAL EVENING CLASS PROGRAM GENERAL INFORMATION

The Advanced Technical Evening Class Program will comprise the subjects listed under the table of contents.

Theory programs will be 60 hours in length consisting of twenty (20) three-hour lectures. Technical science programs will be 60 hours in length consisting of forty (40) hour lectures and twenty (20) hour laboratory sessions.

Counselling and personal interviews will be held during the evenings of registration.

The Colleges of Applied Arts and Technology within the Greater Metropolitan Toronto area will be offering the following series of block programs to assist their students to better schedule their part-time courses in the advanced technician field. The blocks follow:

CIVIL
Mathematics I — MATH 100
Mathematics II — MATH 200
Physics I — PHYS 100
Surveying — SURV 101
Mechanics I — MECH 100
Mechanics of Materials I — MECH 110

ELECTRICAL
Mathematics I — MATH 100
Mathematics II — MATH 200
Electrical Fundamentals — EL 905
Electronic Fundamentals — ELTC 904
Physics I — PHYS 100
Electrical Drafting (Basic) — EL 903

ELECTRONICS
Mathematics I — MATH 100
Mathematics II — MATH 200
Electrical Fundamentals — EL 905
Electronic Fundamentals — ELTC 904
A.C. Circuits — EL 906
Physics I — PHYS 100

MECHANICAL
Mathematics I — MATH 100
Mathematics II — MATH 200
Mechanics I — MECH 100
Mechanics of Materials I — MECH 110
Electrical Fundamentals — EL 905
Physics I — PHYS 100

The above courses are for persons who hold a secondary school graduation diploma or the equivalent and who wish to begin or continue their education in the various technologies. A minimum of 50% for each subject, with an overall average of 60% is required for the certificate issued by O.A.C.E.T.T.

Optional subjects may be selected but confirmation of the school of your choice is necessary. By adding English I and one more technical subject the student can qualify for the A.T.E.C. grade I certificate.

Complete information on the Advanced Technical Evening Class programs is available from the Ontario Department of Colleges and Universities, Mowat Block, Queen's Park, Toronto 182, Ontario.

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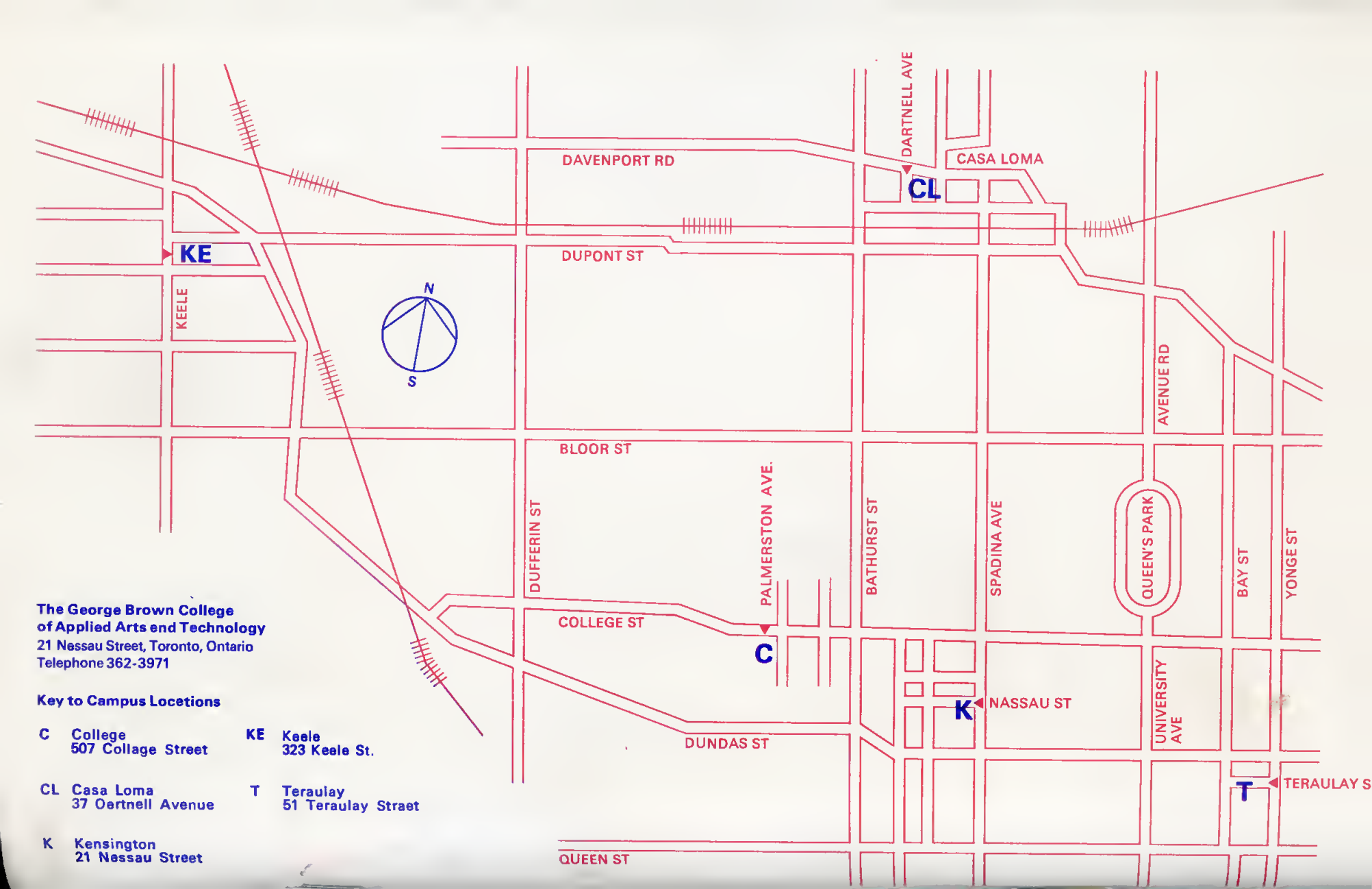

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